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FINAL REPORT
(Volume III)

AUTHORS: W.H. Pugsley
D.W. Armstrong

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with respect to bilingualism
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1. Patterns and trends in
business
2. Education and achievement.

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CORPORATE POLICIES AND PRACTICES
WITH RESPECT TO
BILINGUALISM AND BICULTURALISM

VOLUME III

2.4 PATTERNS AND TRENDS IN BUSINESS

by W. H. Pugsley

2.5 EDUCATION AND ACHIEVEMENT

by D. E. Armstrong

May 31st, 1966

Graduate School of Business,
McGill University

TABLE OF CONTENTSVOLUME III

	<u>Page</u>
<u>2.4 PATTERNS AND TRENDS IN BUSINESS</u> (W. H. Pugsley)	1
2.4.1 Ownership and Control of Enterprise in Canada	2
2.4.1.1 Ownership	2
The French-Canadian owned firm with head office in the Province of Quebec	2
The English-Canadian owned firm with head office in Quebec Province	3
The English-Canadian owned firm with head office elsewhere in Canada than Quebec Province	6
The U.S. owned firm with head office in Quebec	8
The U.S. owned firm with head office elsewhere in Canada than Quebec Province	9
The United Kingdom owned or the European owned firm	9
2.4.1.2 Control	10
2.4.2 Type of Goods Produced	10
2.4.2.1 Industrial Goods	10
2.4.2.2 Consumer Goods	11
2.4.2.3 The Mixed Case	12
2.4.3 Internationalization	12
2.4.4 Technology and Systematization	14
Scale	14
Automation	14
Growth of Markets	14
Organization Patterns	15
Computerization	16

TABLE OF CONTENTS
(Continued)

VOLUME III

The Pace of Change	17
Education	18
2.4.5 Other Trends Influencing Language	20
<u>2.5 EDUCATION AND ACHIEVEMENT</u> (D. E. Armstrong)	22
2.5.1 Introduction	22
2.5.2 Productivity and Income Achievement	24
2.5.3 Professional Achievement	33
2.5.3.1 Introduction	33
2.5.3.2 Architects	
2.5.3.3 Science Graduates	57
2.5.3.4 Engineers	75
2.5.3.5 Ethnicity and Professional Achievement	89
2.5.4 Managerial Achievement	101
2.5.4.1 Social Significance of Managerial Achievement	102
2.5.4.2 Managerial Achievement Ratios	105
2.5.4.3 Managerial Achievement of Architects, Scientists and Engineers	118
2.5.4.3.1 Architects	119
2.5.4.3.2 Scientists	119
2.5.4.3.3 Engineers	121
2.5.5 Conclusion	138

LIST OF TABLES AND CHARTSVOLUME III2.5 EDUCATION AND ACHIEVEMENT

<u>Number</u>	<u>Title</u>	<u>Page</u>
Table 2.5.2.1	Personal Income per Person and Per Member of the Labour Force by Province, 1964	29
Table 2.5.2.2	Relative Earnings Quebec, Ontario & Canada	31
Chart 2.5.3.2.1	Architecture - Bachelor - Quebec	56
Chart 2.5.3.3.1	All Science - Bachelor - Quebec	58
Table 2.5.3.3.2	Number and Average Salary of French and Other Science Majors Graduating prior to 1940	61
Chart 2.5.3.3.3	Chemistry - Bachelor - Quebec	63
Chart 2.5.3.3.4	General Science - Bachelor - Quebec	64
Table 2.5.3.3.5	18 Graduates of French-Language Universities working in Ontario compared with graduates of Other Universities in the same Discipline-Graduation-year Category	67
Table 2.5.3.3.6	70 Graduates with Master's or Licence Degrees working in Quebec who obtained undergraduate degrees at French-Language Universities compared with Master's Graduates from other Universities in the same Discipline-Graduation-Year (of first degree) Category	69
Table 2.5.3.3.7	59 Graduates with Ph.D. degrees working in Quebec who obtained undergraduate degrees at French-language Universities compared with Doctoral Graduates from other Universities in the same Discipline-Graduation-Year (of first degree) Category	70
Table 2.5.3.3.8	9 Graduates with Master's or Licence Degrees working in Ontario who obtained undergraduate degrees at French-Language Universities compared with Master's Graduates from Other Universities in the same Discipline-Graduation Year (of first degree)category	72
Table 2.5.3.3.9	15 Graduates with Ph.D. degrees working in Ontario who obtained undergraduate degrees at French-language universities compared with Doctoral Graduates from other Universities in the same Discipline-Graduation-Year (of first degree) Category	72

LIST OF TABLES AND CHARTS
(Continued)

Chart 2.5.3.4.1	Engineering - All Branches - Bachelor - Quebec	76
Table 2.5.3.4.2	Pre-1940 Engineers - Bachelor - Quebec	77
Chart 2.5.3.4.3	Civil Engineering - Bachelor - Quebec	79
Chart 2.5.3.4.4	Chemical Engineering - Bachelor - Quebec	80
Chart 2.5.3.4.5	Electrical Engineering - Bachelor - Quebec	81
Chart 2.5.3.4.6	Mechanical & Industrial - Bachelor - Quebec	82
Chart 2.5.3.4.7	Mining & Geological - Bachelor - Quebec	83
Chart 2.5.3.4.8	Metallurgical - Bachelor - Quebec	84
Chart 2.5.3.4.9	All Engineering - Master's - Quebec	86
Table 2.5.3.4.10	54 Engineering Graduates at the Bachelor Level of French-Language Universities working in Ontario compared with Graduates of other Universities in the same Discipline-Graduation-year Category	88
Chart 2.5.3.5.1	Engineering-All Branches - Bachelor - Survey '64, '62	94
Chart 2.5.3.5.2	Engineering-All Branches - Master's - Survey '64, '62	95
Table 2.5.4.2.1	Managerial Achievement Ratios in Quebec for those earning \$10,000 and over per year	106
Table 2.5.4.2.2	Managerial Achievement Ratios in Canada excluding Quebec for those earning \$10,000 per year and over	107
Table 2.5.4.2.3	Educational Distribution of 1,692 Executives Occupying the Top Positions by Highest Level of Education Attained and by Size of Firm	111
Table 2.5.4.2.4	Expected Distribution of Managers in Quebec Based on Random Selection Assuming the same Educational Distribution as shown for the Executives of Firms employing more than 50 Employees	114
Table 2.5.4.2.5	Refined Managerial Achievement Ratios in Quebec for those earning \$10,000 and over per year	115

LIST OF TABLES AND CHARTS
(Continued)

Chart 2.5.4.3.1.1	Architecture - Bachelor - Quebec	120
Chart 2.5.4.3.2.1	All Science Courses - Bachelor - Quebec	122
Chart 2.5.4.3.2.2	Other Courses - Science - Bachelor - Quebec	123
Chart 2.5.4.3.3.1	Engineering-All Branches - Bachelor - Quebec	125
Chart 2.5.4.3.3.2	Civil Engineering - Bachelor - Quebec	126
Chart 2.5.4.3.3.3	Chemical Engineering - Bachelor - Quebec	127
Chart 2.5.4.3.3.4	Electrical Engineering - Bachelor - Quebec	128
Chart 2.5.4.3.3.5	All Engineering - Master's - Quebec	130
Chart 2.5.4.3.3.6	All Engineering - Bachelor - Ontario	131
Chart 2.5.4.3.3.7	All Engineering & Science - Bachelor - Ontario	132

2.4 PATTERNS AND TRENDS IN BUSINESS

The purpose in looking at the patterns and trends in business will be to consider their effects on the selection of staff and on bilingualism in industry. Subject to the shortcomings always attending a generalization, we might say that the staff will be selected on the basis of a recruit seeming likely to have or develop normal professional competence, his fitting in with the immediate work need, the general atmosphere and managerial thinking of the firm, and the nature and location of the responsibilities to which the recruit is likely to advance in the course of time. The matter has thus both a present and a future aspect.

The use of bilingualism in business will be much more a present and not a future affair. Business will not be seeking to expand or contract the use of any particular language, since this in itself has nothing to do with earning money. The aim will be simply to use language, as it is encountered by the firm, in the way that best promotes efficiency.

The function of business has traditionally been solely an economic one - to make products that people want, to do so with sufficient profit to be encouraged to continue, and to provide employment in the process. True, growing social and community responsibilities have been put upon, and accepted by, business, but not yet any responsibilities for advancing cultural change. A move in this direction would raise the question of whether owners of enterprise in polylingual parts of the country should be saddled with additional costs - since all change costs money - not faced by firms serving unilingual parts of the country.

Looked at in this light, it would seem as if costs of any such social experimentation should be borne by the country as a whole, particularly since keeping the country whole would be the object of the experimentation. And of course bilingualism in business means not just

more French used in English-Canadian firms but also more English used in French-Canadian firms.

The selection of staff and the degree of bilingualism present will differ substantially between firms and the causes of these differences will now be considered.

2.4.1 Ownership and Control of Enterprise in Canada.

2.4.1.1 Ownership

Ownership of corporations has at least seven significant variations as follows:

The French-Canadian owned firm with head office in the Province of Quebec (a head office elsewhere being very unlikely). Most such firms at present serve only the provincial market, although some have relatively recently begun marketing in Ontario and a few sell across Canada as well. The production and the sales of such firms will thus for the most part be provincial and essentially French-oriented. Such firms will likely have been founded by French-Canadian capital, been organized and managed at the start almost wholly by French-Canadians, and remained that way ever since. There would be no reason to change. Ownership would likely remain at least principally French-Canadian, in spite of possible listing of the stock on the Montreal Stock Exchange, and members of the board of directors, the president, the senior management and the rest would remain such that all were in the close rapport which comes from using a single mother tongue. Moreover, production wholly in a French-Canadian community and selling entirely in a market that used only that language would reinforce the absence of any need to use English. One would expect the staff to be selected - ignoring the special needs of family firms - solely from French-Canadians vocationally qualified. The only areas where English might be needed would be at the top management level so the company could be guided

in the light of what was going on in the larger industrial world adjoining Quebec; at the research or top production level to keep informed of new outside technical developments; and in marketing to the degree that sales were made to English customers, particularly on the Island of Montreal. Where English was needed, it would logically be provided by bilingual French-Canadians, so that the inner harmony of singleness of language in daily management would not be disturbed.

It is clear that in these circumstances the use of English would be minimized, and bilingualism minimized as well. The effect on selection of staff and on bilingualism can thus be said to be employment exclusively of French-Canadians, some of them needing to be bilingual, and minimization of bilingualism from the French side. All communications, written and oral, from top to bottom, would be in French.

The English-Canadian owned firm with head office in Quebec Province.

Here to a much greater degree we have to allow for the multi-provincial and the national firm. In a way precisely analogous to the French-Canadian firm, this one will have been started with English-Canadian capital, hence with English-Canadian top management, hence English-Canadian employees as far down the line as practicable. How far depended on where production took place and where the sales were made. Top management, being already English-speaking, would have no difficulty in following outside developments of commercial interest.

With production within the Province of Quebec, the likelihood is that the line workers would be substantially French-Canadians, although this would be much less necessarily the case at the west end of the Island of Montreal where there have traditionally been large

pools of English-speaking labour. If there were only a few French-Canadians, the language of production and the office would be English, but in many cases the numbers of French-Canadians employed at these levels is or has become high enough to make French the plant language. Somewhere along the line the thinking and instruction from the top then has to be translated. The likely level for this is the plant itself, with a bilingual manager and immediate staff, or at least bilingual immediate staff working with an English-Canadian plant manager. Much the same could be said on the marketing side, except that here the function could probably never become so wholly French-Canadian in its complexion. There would be substantial sales to English-Canadian customers both in Western Quebec and perhaps Ontario, so that a substantial part of the distribution network would operate in English. This would tend to maintain the hold of English as the operating language in the marketing side of the business, with less need or use for French-Canadian language ability as far up the line toward the top.

This picture is more complicated with the kind of firm that has by now become national in its scope, with regional production plants and/or a regional sales organization to serve its cross-Canada market. Since two-thirds of the country's population lives outside Quebec Province, we should probably assume that in the case of this firm maybe the larger part of its production and certainly the larger part of its sales will be outside the Province of Quebec, or at least of the more densely French part of Quebec.

This introduces some new aspects. There may be a need, periodically or regularly, for the exchange of information and production experience between one plant and another for the sake of

maximizing efficiency. If the plants outside Quebec province outnumber or outweigh those within, it will be the Quebec plant staff men, not their more numerous counterparts at the other plants, who are bilingual, so that the needed collaboration can take place. No one will plan for many bilingual English-Canadians when much fewer bilingual French-Canadians will do, especially with bilingual French-Canadians much easier to find.

Similarly at the level of top production management, the major element in a combined need will rule. That is to say, in proportion as the outside-Quebec production outweighs the inside-Quebec production (French Quebec that is), the need for an English-Canadian candidate for production manager to speak French will diminish, while for the French-Canadian candidate English becomes more essential. If the Quebec man is to make himself eligible for advancement to become manager of all the production, he will have to be able to understand what goes on in the more numerous non-Quebec plants and communicate effectively with their managers. In short, he will need to be bilingual to avoid a ceiling on his advancement potential. The aspiring local manager of the other plants is at less of a disadvantage by any lack of knowledge of French, since by definition the Quebec production here is a small part of the total picture. Bilingualism on the part of the French-Canadian may perhaps not be necessary in order to become head of all production when this takes place solely in Quebec, or at least in French-Canadian communities, but it becomes necessary when the production is spread across the country. And the same principle will operate on the marketing side of the business.

What this means in terms of selecting staff is that the more the firm is nationwide in its scope, rather than purely provincial,

the more it will be inclined to hire English-Canadians with the assurance that it will have plenty of places where it can use them, whether or not they are bilingual, and it will want the French-Canadians it hires to be bilingual unless they aspire to nothing more than production line work or selling in the French segment of the market. Even in the French-Canadian owned and managed firms, some knowledge of English at top departmental levels would be needed to keep abreast of techniques developed elsewhere in Canada and the United States and being used by competitors. Any expansion by such firms outside Quebec would at once expand this need, in view of the horizontal communications that develop in the multi-plant, multi-sales branch firm.

As to bilingualism in this picture of Quebec firms expanding out into other provinces, communications would likely be in both languages when the number of employees concerned or the importance of the subject matter seemed to justify or require this. Even if there were only one employee who spoke no English, it would be only common sense to put up a no smoking sign in his particular language if smoking in some section of the plant meant a risk of the whole place going up in flames. Admittedly the company would be less interested in bothering about such a sign if only the feelings of the employee were involved rather than a risk to the business, and this sort of conflict of interest - the conflict of personal feelings vs. economic costs - underlies much of the problem of bilingualism in industry.

The English-Canadian owned firm with head office elsewhere in Canada than Quebec Province. The only real difference between this and the immediately preceding case is that this firm if it is in Quebec in any sense - production or sales - is likely to be at least equally and probably more active elsewhere, probably nationally. Its

management would even more certainly be English-oriented, and it will regard its Quebec operations with a slightly more detached point of view. What has already been said about production and sales in the immediately preceding case applies here too, with greater certainty that it will be the Quebec section that is bilingual to funnel communications effectively to and from head office, than that the larger part of the organization will become bilingual to be able to communicate with the Quebec division.

The tendencies already mentioned in the preceding case as regards selection of staff will be found here too, perhaps reinforced, with the greater certainty that for any notable advancement the French-Canadian employee will need to be bilingual. The more important the Quebec operations are to the company, of course, the greater the opportunity of the bilingual French-Canadian, while if the Quebec operations are indeed of importance and the bilingual French-Canadian is prepared to accept transfer out of the province to acquire training and experience in the English language sector, he probably will have a substantial advantage over his English-Canadian non-bilingual fellow employee in the competition for ultimate appointment to the presidency. This would be true even of the Quebec-active firm with head office outside Quebec, and even more so if the head office were in Quebec.

The incidence of bilingualism is probably much the same in the Canadian-owned firm, whether the head office be in Quebec or elsewhere. A Quebec head office is likely to have at least some French-Canadian clerical help and a few more higher up, but they will be bilingual and English the language used. There is thus a considerable inertia against any sharp increase in bilingualism in Canadian business, with original ownership and the overall make-up of production personnel and customers comprising the continuing determinants.

The U.S.-owned firm with head office in Quebec. Here the company's operations could be provincial alone, but they are rather likely to be nationwide. An obvious exception would be U.S.-owned companies incorporated to mine extractive materials - iron, asbestos, etc. - to be shipped to the United States. There seems no reason to suppose these firms act differently from the English-owned companies catering to the provincial or national market. The same organizational principles and managerial philosophies will be found being applied. The U.S. corporate investor here regards Canada as just another foreign country, if a little more conveniently located and more stable in its political ways, and the aim is to make money.

Such a source of capital may be more willing, if the operation is to produce in and/or sell to essentially French-Canada alone, to build an organization that is wholly French-Canadian (but bilingual at the top) - if the capital source is satisfied that the operation will under these circumstances be efficiently run. In the rather more likely case of the operation started here being intended to operate nationally, there will likely be a preference for the essentially English-oriented organization since this would tend to keep any problem of language difference to a strictly proportional level. It would also make easier and more effective any interchange of personnel, at whatever level, for training and other purposes between the parent and the subsidiary company.

Here too circumstances work against selection of the unilingual French-Canadian, and not very noticeably against the unilingual English-Canadian, but of course likewise not against the bilingual French-Canadian with vocational qualifications equal to those of the English-Canadian. Here again the barometer of bilingualism

simply remains steady.

The U.S.-owned firm with head office elsewhere in Canada than Quebec Province. This case should be little different from the similarly-owned company with head office in Quebec but operating nationally, except that the urge toward the use of English as the working language will be a little stronger.

The United Kingdom owned or the European-owned firm. Companies of this sort are to be found both in Quebec and Ontario, to say nothing of elsewhere in the country. The language difference does not appear to have led United Kingdom firms to avoid Quebec as a base for operations, perhaps because of the long tradition of a body of English-speaking business and finance in Montreal, and the fact that we are necessarily speaking now of decisions made for the most part long ago when another atmosphere prevailed.

European interests, on the other hand, do seem to have shown some noticeable liking for locating in Quebec - particularly in Montreal - perhaps because the mixed complexion of the city and its languages made the continental mind feel more at home.

The United Kingdom owned company would probably tend to use English-speaking personnel as far as possible, and seek its markets more in the English segment of the province or country. The European-owned firm - Swiss or Belgian owned, for example - might well lean toward having French-Canadian personnel, assuming comparable professional qualifications, so that if translation from one language to another were necessary at all, it would occur not at the top management level but - as in the case of United Kingdom owned firms here - at a lower level in the Canadian organization. Bilingualism would probably be slight in the United Kingdom owned firm, but quite noticeable with the European-owned firm.

2.4.1.2 Control

While ownership gives control, many a business is controlled without complete ownership. Majority ownership is all that is required. Having control enables and requires the person or persons having control to organize and supervise the business and the effects will be as described earlier in the case of ownership. The only difference, perhaps, is that with complete ownership the organizer need consult only his own wishes, whereas when he only has control through majority ownership, and there is thus a minority partner or partners, he may feel a greater need to be sure his actions will stand up to outside (and in particular, legal) scrutiny at a later date.

As stated earlier, there will be a tendency for the language of the business, and in particular of the management of the business, to be that of the ownership. This will also be true in the case simply of majority ownership or control. The business is likely to be started where the language of production and of the initial market will also be the same as the language of those assembling the necessary capital. So if the language of management is the language of the ownership (or majority ownership), this is only logical and natural.

2.4.2 Type of Goods Produced

2.4.2.1 Industrial Goods

The tendencies in the cases just discussed will be influenced in some degree by the nature of the goods or service the enterprise offers to its customers. If the product is an industrial good, that is to say, one bought essentially by other businesses rather than by individual consumers, the tendency toward English orientation will probably be stronger. The element of technical innovation here

assumes greater competitive importance and the overall tide of this on our continent runs into Quebec, not out of it. New designs for automobiles originate in Detroit, not Montreal. Moreover, the likelihood of wishing to sell outside just the single province of Quebec becomes greater, perhaps even essential to obtain sufficient sales volume, and thus there is a greater need both to understand English customer needs and English competitive products. Not only will more English be needed in selling, but in production too, even though this production be wholly in some French-Canadian community. The reason is that production is in this case more likely to be designed for specific customers' needs, and this will require ability to communicate with the customer's representatives on the production floor where his equipment is being made. To the degree that more industrial customers are sought outside Quebec, therefore, the need to be fluent in English increases even within a Quebec plant, to say nothing of out on the selling front.

2.4.2.2 Consumer Goods

In the case of companies making goods that will be bought by consumers, we have the greatest likelihood of a firm being able to exist on a provincial market alone. The volume of sales available may be sufficient to support enough mechanization to produce at costs (and hence prices) low enough to be competitive or the nature of the product may be such that low volume, job-lot, rather high-cost production is the normal case.

There is perhaps here a greater likelihood that the number of French-Canadians employed would be more exactly proportional to the company's sales to French-Canadian customers, since such sales would tend to pass by selling in French to French-speaking distribution entities. This is at best a generalization. The actual picture is very scrambled. A firm in Montreal, like Eaton's, an ultimate seller

of consumer goods, undoubtedly sells to French-Canadian customers many goods made in English-Canadian factories, and equally certainly it sells to English-Canadian customers many goods - some furniture, for instance - made in French-Canadian factories located in small Quebec towns. Any tendency towards such proportionality between the language of personnel and the language of customers would at best apply only in marketing. Production could probably be oriented one way or the other without any customers caring so long as the workmanship in the product sufficed.

2.4.2.3 The mixed case

Some companies make, or at least sell, their products in both the industrial and the consumer goods market. An example would be the paint industry. One can only say that such firms have to face in varying measure the conditions of both kinds of business as already described, and this fact would simply diffuse somewhat the effects in such a case.

2.4.3 Internationalization

The United States is the dominant industrial power in our hemisphere, so its influence of language is bound to be felt strongly in neighbouring Quebec. Furthermore, the U.S. is a large exporter of investment capital and our country will remain indefinitely in need of this in large amounts. So the flow is in our direction, and the borrower usually needs to be familiar with the lender's tongue. Considering the impact that the language of America has had on Europe in the past 20 years, it is hardly surprising that it should have great impact on much-nearer Quebec, which is moreover part of a country the rest of which also uses English as its language. Ownership of Canadian companies from abroad, and the establishment

of Canadian-owned subsidiaries abroad, especially in the United States, all have their effect of involving us - and this includes Quebec - more in what goes on outside our borders, and most of it will not be in the French language.

Selling farther afield - in the huge and nearby U.S. market, for instance - in order to expand sales, brings increasing contact with English, and as already mentioned, corporate ownership ties with the U.S. can involve the exchange of personnel for training purposes between Quebec and English-language offices, so that staff will tend to be English-Canadian or in any event bilingual French-Canadians.

Greater even than these influences, perhaps, is the dynamic course of industrial innovation. The United States, with its extreme degree of industrial development, and its high expenditures on research and development, is a prolific source of new products, new promotional ideas, new production machinery, and in general new ways of doing things. For all these things new names, words or phrases are coined in English. Translation will be meaningless until the French equivalent has been publicized enough for all to know what it refers to, and in the meanwhile the English version will have been getting high powered advertising. The pressure of English from this source on French Quebec is strong and unrelenting. To the degree that English is the lingua franca of international business, industrial development in most countries is communicated between the nations first in English, and then comes to Quebec only secondarily in translation.

All this means pressure of the English language on French in Quebec, and tends to push French back farther into Quebec, rather

be true. Any retail operations would be examples. With many manufactured goods, however, particularly the more expensive ones, the minimum economic size of a production unit will be large enough that most producers will have some excess capacity, even with growth of the local market, and the urge to try and nibble into wider markets will be strong. Thus again producers in one market start selling in the next, with consequent need for familiarity with the second language. As this could work in either direction, it would seem likely to leave bilingualism about where it is.

Organization patterns. Details of systems of organization would normally be available in French as well as in English, so the mere following of describable techniques should offer no real difficulty to the all-French firm. A rather different sort of difficulty may arise, however, from the fact that U.S.-developed systems may call for an organized form of team work and collaboration that the individualism so prominent in French-Canada may find personally disagreeable.

The trend towards more teamwork and collaboration in management also has implications for the relative use of French and English. Recent empirical studies of the management process have stressed the wide net of communications in which any one manager is involved. The traditional idea of a line manager receiving instructions from one boss, passing them on to five subordinates after perhaps conferring with one staff advisor, bears little resemblance to reality. Indeed the typical manager spends only a small part of each day communicating with his superior or his subordinates. Instead he spends most of his time dealing with an information and communication net embracing many types of service and professional people in and out of the firm, customers, suppliers and

many other horizontal superior and subordinate level people in the company outside of his own line. It is apparent that this trend makes it increasingly difficult to operate a unilingual French-language hierarchical cone of productive activity.

Computerization. Since the appetite of the computer for data to analyze is so great, the installation is likely to be at one central location (adjacent to head office) with data fed to it from all the various company locations. With such detailed answers and analyses so quickly put into central management's hands, the head office seems likely to make more of the decision, in contrast with former conditions which encouraged the delegation of authority to outlying divisions. Certainly all this calls for additional technical programming skills in the vicinity of the computer to use it intelligently, but there seems no reason to suppose that the literature of the subject will not become quickly available in French or that the competent personnel for this function will not be available among French-Canadians. This development then seems to impose no serious new need for English in the French-Canadian firms. In English-Canadian firms, however, increased centralization would seem to reduce the number and level of managers in local plants and thus would tend to reduce the scope of French-language management in a branch plant in Quebec.

This trend towards centralization is being reinforced by the increasing use of management systems. While most of the systems so far in use are partial, they are increasing in scope and some of the most progressive companies in the United States are close to having an integrated management system supported by a total information net.

These management and information systems pose a new dimension to the language problem, not only because they will at once centralize geographically the decision making and widen (geographically) the communication

net, but also they may force all managers to use a new language - which could be a combination of English and Fortran.

The Pace of Change

It is apparent that the pace of technological, scientific and managerial change is quickening. That is to say there is a tendency for the professional on the research frontier to move away ever faster from the generalist businessman who traditionally has made the decisions.

It is difficult for any one man to keep up with what is happening in the learned journals in operations research, cybernetics, experimental social psychology but it must be considerably easier for an English-language businessman in Canada to adapt to and to exploit these new developments than for the French-Canadian businessman operating in a firm which is in part at least unilingual French.

The pace of change affects equally the universities and again businesses through the universities. One of the ways that the (line) businessman copes with the new technical and managerial revolution is in fact to delegate decisions to the (staff) frontiersman. But the frontiersman is for the most part the product of the university - more and more often at an advanced degree level.

Anyone who is familiar with the problems of the English-Canadian universities will admit that they have not been able to keep up with the U.S. institutions in the new disciplines. Yet after a discipline is reasonably well developed, the English-Canadian universities can at least tap the U.S. academic and research labour market. The French-language universities cannot.

When bridge building techniques remained tried and true for thirty years, this problem was not too serious but now when it is

virtually impossible to bolt a computer to the floor before it is obsolete, the problem is more acute.

Education

Education today reflects the revolution that is occurring in the managing, social and technological sciences and equally important it is being shaken up by the revolution that is occurring within its own methodology.

The changes now occurring in education are so new and so truly startling that it is difficult to perceive all their implications. A propos of our present problem, it is easy to see that with increased efficiency, in the educational process, it should be less costly to learn a second language and hence over time the real cost of bilingualism may diminish. With more bilingualism in English-Canada, one would imagine that some of the pressure would be off the French-Canadians to learn English. However, this argument cuts both ways for the easier it is for the French-Canadians to learn English, the less pressure there will be on the English-Canadians to adapt.

Another development which may increase the pressure to study English is the validation of educational material. At the present day it is only a marginal proposition to revise a conventional U.S. college text to bring out an English-Canadian edition. It is submarginal to do the same thing for the French-Canadian market. The time may not be far off, however, when all educational material will be validated in a classroom laboratory to maximize its educational efficiency. A validated text, be it programmed or otherwise, is very much more expensive than an ordinary text and when and if validation becomes common practice, we will see fewer English-Canadian editions and fewer still French-Canadian editions of college material. Inevitably this will mean increased

pressure to shift education and research in specialized subjects, especially in upper years, and at the post-graduate level, to increasing use of English (or perhaps we should say American).

Another aspect of education which will work in the same direction is the enormous increase in the number of disciplines relevant to the operation of a modern company. Significant work of relevance to business is occurring in university departments or company research departments concerned with industrial psychology, educational psychology, social experimental psychology, control engineering, cybernetics, systems analysis, computer science, operations research - to mention only a few.

Canada lags far behind the United States in some of these fields and perhaps in all of them yet even in the United States it would be difficult to find a single university or a single company which is making significant contributions in all of these fields.

It is very difficult to see how an English-Canadian university or an English-Canadian firm of any size could hope to exploit these new developments without relying heavily on U.S. expertise. It is even more difficult to see how a French-Canadian university or a French-Canadian company could keep up with these fields without increasing acceptance of English, at least at the research level.

2.4.5 Other Trends Influencing Language

There are some trends which, if not constituting pressures one way or the other, are nevertheless perhaps worth mentioning. There are geographical shifts going on as between French-speaking and English-speaking in the Province of Quebec, and doubtless in some degree too elsewhere outside Quebec province. Thus the Eastern Townships at the time of Confederation had enough English-speaking people to make it then appear desirable to insert in the constitution provision to ensure that majority pressures would not reduce the political representation of these groups. Today the area is largely French-speaking. Coming closer to the particular concerns of this enquiry, the English-speaking community in Quebec City has been diminishing in relation to the whole city. A substantial neighbouring English-Canadian company has heard some criticism of itself for not employing more French-Canadian staff, but the company wonders if it is not one of the last remaining employment opportunities for the English in Quebec City. Moreover, with many of the present English youth there children of the English-Canadians the company had to bring in originally from Ontario to start operations, it wonders if it has not some obligation to keep in a position to offer employment to local English-Canadians.

Some English-Canadian companies based in Quebec province are now expanding by acquiring operations in Ontario or still farther away. Such acquisitions will be English-oriented, and with what might be called the firm's centre of gravity thus moving west it would not be surprising if its head office eventually moved westward, closer to being equidistant from its various operational sites (and markets). This would inevitably move the top management and its attendant departments out of a French-oriented milieu, with consequent impact on selection of staff and bilingualism in that firm.

Interestingly enough there has also been some movement in French-Canadian owned industry towards westward expansion. One such company

recently acquired an Ontario manufacturing firm. In precisely the same way that an English-Canadian oriented firm in Quebec might well operate in French at the plant floor level, so this acquiring French-Canadian firm will presumably have to conduct its production operations in Ontario in English, and of course accept the use of English in selling the output to the Ontario market. An interesting question will be: how far in the total organization can the presumably unilingual employees of the Ontario subsidiary aspire to rise?

Both of these kinds of development would increase relatively the use of English by Quebec-based firms, but on the other hand firms based outside Quebec still expand into Quebec thus having a contrary language effect. There is as yet no very noticeable indication of any strong tide flowing much more noticeably in one direction than the other- and new corporate interests entering from abroad probably choose as their headquarters the centre whose language seems closest to theirs. There is little likelihood that English or French will use the other's language as a thinking and working medium for any reasons short of practical need. This means that for most purposes the contour of the language frontier in the country's industry is likely to remain essentially where the ethnic division of the population puts it, with corresponding effect on the selection of staff for our corporate enterprise. To business employers qualifications remains the essential basis for employment. Part of the qualification will be ability to speak the mother tongue of plant personnel and the bulk of the customers, and this tends inescapably to relate to the basic division of the population. Beyond this, and especially at the higher reaches of management of any company, there is a need for knowledge of English because of the inevitable impact on Quebec and indeed all Canada of the American industrial technology, society, and economy.

2.5 EDUCATION AND ACHIEVEMENT

2.5.1 Introduction

The purpose of this study is to examine the relationship between education and economic achievement. If this relationship can be established, it will be interesting in itself for a number of reasons; but for the particular purpose of this study, attention must be more narrowly focussed on the role of education in explaining the relative achievement in commerce and industry of Canadians of different ethnic origin.

The study here proposed is beset by more than the usual number of conceptual and measurement problems. One realizes very quickly that even the terms used in the title of this study, "education" and "achievement" are themselves difficult to define or measure. For lack of a better measure of education, we shall have to use years of formal schooling, but everyone who has ever been remotely connected with an educational institution knows that education does not begin or end with the formal education programmes. Institutions vary greatly in the qualifications of their teachers, the number of stimulating books in their libraries, the quality of their curriculum, and the relevance of what they teach to the world of commerce and industry.

Achievement is an even more difficult concept to define or measure. Obviously it can be assessed only in relation to an agreed yardstick or goal, but in the realm of education the available yardsticks are many, uncalibrated and subjective. The actual, though perhaps the unstated, objectives of a school system might be to make sure that students continue to follow a particular religious faith, to cause the taxpayers a minimum of inconvenience,

to discourage bilingualism, or to perpetuate the skills, attitudes and prejudices of the parents. If judged against some or all of these goals, the school system might be very successful. However, goals vary from person to person so that some people might regard the school system described above to be a complete failure because its students do not achieve other objectives such as high incomes or rapid promotions in industry.

This study will be concerned with achievement in a materialistic sense. Our main concern will be with income, productivity, and promotion. However, it must be conceded immediately that there is no way of proving that these are the aspects of achievement which are most important or are the ones in the light of which an educational system should be judged. The justification for looking at the materialistic aspects of achievement is that we believe that French-speaking and English-speaking Canadians both aspire to higher incomes and better jobs whether their educational systems take these factors into account or not.

The next problem in considering achievement is that it is usually only a relative term. Achievement may be judged by comparing one group or individual with another at one point of time, or it may be applied to the same group or individual at two points of time. Or again, the achievement of an individual or group may be measured against one or more objectives which, of course, may include the aim of doing as well economically as some other group, or increasing one's well-being relative to the past.

The fact that achievement may be measured against one or more objectives raises the interesting possibility that a single objective may not be in the range of the possible, or that two or more objectives may be mutually incompatible. For example, if an English-speaking Canadian wishes at the same time to remain unilingual and to achieve a high income by selling brushes door to door in Quebec City, he is doomed to disappointment: his achievement with regard to one or the other of his goals is going to be very low. Unilingualism, which could easily be a goal of some English and French-speaking Canadians, (a goal which is itself an aspect of educational policy) may very well prove to be incompatible with certain other objectives.

In the study of achievement in education, it is virtually impossible to avoid making value judgments. The facts that are collected and the questions that are asked usually reflect an underlying set of assumptions or attitudes. For example, the members of group A might complain that they are under represented in management vis-a-vis group B. It might be quite possible to "prove" this fact by counting heads and comparing the number of A's and B's in top management with the number of A's and B's in the total population. If one made such a count, however, one would in fact be implying that Group A and B have the right to expect proportional representation in management (as they would in parliament perhaps) without reference to qualifications. To take a position either that A's and B's should have equal representation in management

regardless of qualifications, or that membership in A or B should be completely ignored and that only qualifications should be considered, is to make a value judgment. Obviously in the matter of running a parliament, few are prepared to admit that the educational qualifications of political candidates are the only consideration, although it is of course hoped that constituents will elect candidates with good qualifications. In the running of a government administration or in the staffing of the courts of justice, quite different emphasis may be placed on educational qualifications.

For business management, on the other hand, it may be argued that its sole job is to be efficient, and that if membership in A or B is irrelevant to the quality of management, then membership in A and B should be completely ignored in making appointments.

It is possible to envisage conflicts about measurement involving representation versus qualifications, but indeed even if one chooses a goal of equal representation for two or more groups, one can still not completely avoid qualifications since qualifications or attributes are essential to the definition of any group. Should we compare the ratio of French and English-speaking Canadians in management with the ratio of these two groups in the total population? Or should we define the groups to include only the adult population or the working population, and should this include or exclude people in the church? Should the groups to be compared be so defined as to include those over a certain age and with a certain educational background? One can

very quickly see that the problem of making "fair" comparisons must be, to some extent at least, subjective.

Need it be added that the more precise our definition of the group, the less reliable our data? It is one thing to define and to measure income achievement of all French and English-speaking Canadians, but if one's idea of fairness directs one to compare achievements of two groups of French-speaking and English-speaking Canadians each of which has equal facility in a second language, each of which has the same quantity and quality of education, the same personal aspirations, the same set of values so far as business is concerned, and so on, then one is going to have a hard time identifying the groups, let alone measuring their relative achievement.

Both a value judgment and a measurement problem arise in the introduction of time and history into the analysis. The dead hand of the past lies heavily on us all. The workman's son will have a harder time becoming president of the CPR than the doctor's son, and undoubtedly if the workman is unilingual French living in St. Tite-des-Copes, the trip will be more difficult than if he is unilingual English living in Toronto. Class, income, and regional mobility exist in North America, but even so it usually takes motivation and a few generations to move from a subsistence farm to the executive suite.

A region, a family or an individual, whether French or English-speaking, must live with a given stock of education, attitudes, wealth and goals, and these will not be changed overnight, regardless of how badly society wants change.

Many other problems confuse and complicate this study. It attempts to single out the impact of education on achievement and yet many other explanatory variables are obviously involved. Furthermore the whole area of education and achievement may bring forth an emotional reaction on the part of interviewees which may or may not affect practice and policies. Finally it must be noted (in our self defence) that there is an absence of a research base in this area - especially in Canada. There are, unhappily, very few shoulders on which we can stand to improve our view of the countryside.⁽¹⁾

(1) This study was completed before the Second Annual Review of the Economic Council of Canada was available.

2.5.2 Productivity and Income Achievement

It is a matter of national concern that levels of income and productivity are not the same across Canada. This is only one aspect of a much larger problem which leads us to ponder the reasons why there are "have" and "have not" nations and why, in comparison with the United States, at least, Canada is a "have less" nation.

For purposes of this particular study, it is the difference between English and French-speaking Canadians which must concern us, but because of the way data is collected, it is not always possible to distinguish income and productivity levels of French and English-speaking Canadians, and some of our analysis must therefore deal with differences among provinces. In this chapter we shall attempt to describe very briefly income differences and to put the problem in perspective.

Our analysis focusses on the fact that there is a significant income difference between Quebec and Ontario and that this difference has not diminished over time - at least it has not diminished very much. This fact is surprising because there exist in any free trading area strong economic forces which should tend to equalize wage rates. With this in mind we shall examine two possible explanations for the failure of Quebec to achieve the same income levels as Ontario. The first is that there may be some kind of ethnic prejudice which holds back the French-Canadians, and the second, that the persistent differences in income are explained by equally persistent differences in educational levels. The table on the following page shows all provinces ranked in order of per capita

TABLE 2.5.2.1

Personal Income per Person and Per Member
of the Labour Force by Province, 1964

<u>Province</u>	<u>Personal Income per Person (1)</u>	<u>Personal Income per member of the Labour Force (2)</u>
Ontario	2,125	5,476
British Columbia	2,079	5,656
Manitoba	1,796	4,901
Alberta	1,793	
Saskatchewan	1,683	
Quebec	1,608	4,585
Nova Scotia	1,362	4,180
New Brunswick	1,246	
P.E. Island	1,224	
Newfoundland	1,065	

(1) Source: D.B.S. National Accounts, Income and Expenditure 1964. Table 29.

(2) Source: D.B.S. National Accounts, Income and Expenditure 1964. Table 28.
D.B.S. The Labour Force (Supplement to March 1965 Report).

personal incomes in 1964. It also shows the income per member of the labour force. From this table it can be seen that the income and productivity achievement of Quebec places it in about the middle of the Canadian provinces, though below the mean. If the view from Quebec looking toward the greener pastures of the West is discouraging, a Quebecer can always draw comfort from a glance over the backyard fence at his Eastern neighbours.

Of all the comparisons that might be made as a reference point for productivity and income achievement, the one which has been singled out in this section is that of Ontario and Quebec. The two provinces are neighbours; they are both large and centrally located to serve the Canadian market. Both provinces have long-established and highly-developed manufacturing industries, similar natural resources and similar resource-based industries. Finally, one province is about as English-speaking as the other is French-speaking.

Another very good reason for making this comparison is that Professor André Raynauld in his book, Croissance et Structure Economiques de la Province de Québec¹, has already set out the relevant facts. Very briefly, Professor Raynauld shows that for about as far back in time as available statistics permit us to go, income in Quebec has been below that of Ontario, and also below the Canadian average. His table is reproduced below with the addition of figures for the period 1959 to 1964

¹ Raynauld, André, Croissance et Structure Economiques de la Province de Québec, Ministère de L'Industrie et Du Commerce, Province de Québec.

TABLE 2.5.2.2

Relative Earnings Quebec, Ontario & Canada

	<u>Quebec</u> <u>Ontario</u>	<u>Quebec</u> <u>Canada</u>
<u>Personal income per person`</u>		
1926-31	74.25%	89.12%
1935-39	71.86	90.15
1953-58	72.25	85.84
1959-64	74.15	86.86
<u>Personal income per worker</u>		
1935-39	77.99	93.32
1953-58	81.35	88.27
1959-64	82.10	89.23
<u>Wages, salaries and other income per worker</u>		
1935-39	79.26	96.33
1953-58	80.80	91.93
1959-64	82.25	93.22
<u>Average hourly earnings in manufacturing</u>		
1938-39	80.8	87.5
1955-57	84.0	90.2

These figures suggest that there is a slight tendency for Quebec to catch up to Ontario but it is not obvious that the gap between Quebec and the Canadian average is narrowing. It is, however, the similarity of growth rates and the consistency of the gap in productivity and incomes that catch the eye, rather than the changes in the relative position of Quebec and Ontario or Canada.

This behaviour of relative wages in Ontario and Quebec is surprising because on theoretical grounds it has long been argued that so long as there is free trade between two regions, factor prices should tend to equalize even if the factors of production are not themselves free to move. In other words

so long as Ontario and Quebec can exchange goods freely with each other and can exchange goods with the rest of the world on equal terms, we should expect that in time wage rates in the two provinces would tend to become equal. This tendency would be strongly reinforced of course by the freedom of labour to move to the regions in which there was the highest rate of pay.

Without bothering with the more general and, in a sense, more theoretical, case, we can quite easily see why wage rates in Ontario and Quebec should tend to equality so long as the average worker in Quebec is as productive as the average worker in Ontario, and so long as the distribution of skills and abilities is approximately the same in the two provinces.

The importance of the assumption that the labour force in the two provinces is homogeneous cannot be too strongly stressed. Incomes are absolutely dependent on productivity, which is simply to say that the goods and services available for distribution to workers, including management, cannot possibly be greater than the goods and services which the workers themselves produce. If workers in Quebec or Newfoundland or any other province are less productive, their wages must inevitably be less. Factor price equalization (here the equality of wage rates) is likely to come about only if the factors are indeed homogeneous, at least to the point of being equally productive.

Let us suppose that throughout our history all Quebec workers were just as productive as workers in Ontario but that, as we know, wage rates were lower in Quebec. Could this condition

persist?

A moment's reflection would indicate that it could not. Suppose two competing manufacturing plants, one in Ontario and one in Quebec, sold the same product in a national or an international market. The market price of the product from the two plants would have to be the same, and, depending on the location of the market in relation to the plant, (i.e. depending on the relative transportation charges), the net-back would be nearly so. Since there is a single capital market in Canada, the terms on which money can be obtained would be the same, and there is no reason to imagine that available technology would be any different in the two cases. Neither would raw material prices, power or energy costs be very different. In short, apart from the difference in wages which we have assumed, all other costs should be about the same. If under these circumstances, however, wage rates were 10% lower in Quebec, the Quebec plant would initially be more profitable in absolute terms by an amount equal to 10% of the wage bill. Such an amount of additional profits would of course make the Quebec location much more attractive than the location in Ontario¹.

Over time, therefore, new plants would tend to be located in Quebec rather than in Ontario, and in response to normal market growth, the established Quebec plants would expand

¹ Suppose that in a manufacturing operation the capital to value-added ratio is 2 to 1, that equity represents one-quarter of the invested capital, and that labour accounts for 50% of the value added. Under such circumstances a 10% saving in the labour bill would add 10 percentage points to the rate of profit, which could well amount to a doubling of profits.

well before those in Ontario. Under the circumstances we have assumed, manufacturing in Quebec should grow considerably faster than in Ontario, and the additional demand for Quebec labour should in time bring Quebec wages up to the Ontario level at which point the incentive to shift manufacturing activity to Quebec would cease.

As Professor Raynauld has already discovered, industrial growth in Quebec has not been significantly higher than that of Ontario, and as we can see from the previous table, equality of wages has not come about. Professor Raynauld examines five factors which might explain the failure of wages in Quebec to be as high as those in Ontario: population growth, technology, scale, competition in the labour market, and unionism. Without going into these matters as deeply as does Professor Raynauld, one could agree that more rapid population growth in Quebec, inferior technology, smaller scale, less competition for labour, or fewer or weaker unions, might very well have a depressing effect on wages in Quebec, and any one of these factors might explain why, initially at least, wages in Quebec might start out lower than those in Ontario, even when labour productivity in the two regions was the same. However, none of these factors should be able to prevent the economic forces described above from accelerating the economic growth of Quebec and from bringing wage rates in Ontario and Quebec into line. Moreover, since the war at least, the population of Quebec has not grown faster

than that of Ontario. The same technological know-how or effective knowledge is available to investors whether they locate in Ontario or Quebec, and even if originally Ontario plants were bigger than those in Quebec and had therefore advantages of larger scale, once entrepreneurs realized that given the same equipment, Quebec workers were equally productive but less expensive than their colleagues in Ontario, they would still be led to build new big plants in Quebec rather than in Ontario, and they would still have the incentive to enlarge the Quebec rather than the Ontario plant. Finally, even if Quebec unions were weaker or less militant than those in Ontario, one would expect this to be yet another factor in encouraging the movement of manufacturing activity to Quebec, not only because wages were lower, but also because with weaker unions managers would find it easier to reduce costs by introducing changes, new technology and so on.

Incidentally even if there is evidence that strong unions in some industries in Quebec had succeeded in narrowing the gap in wages between the two provinces, this evidence would not be inconsistent with our hypothesis that education, not unionization, explained over-all productivity and wage rates.

If Quebec unions succeeded in obtaining the Ontario wage scale, the management in these unionized industries should be more successful over time in attracting the relatively scarce supply of better educated workers in Quebec. These better workers would in turn be more productive and earn the higher wages paid by that industry. Of course the implication of raising the productivity and educational level of the unionized industries

is that the average productivity and educational level of other industries would be correspondingly lowered. Unions are not likely to change the total stock of education in a province.

On the other hand if unions raised wages without raising productivity in a few Quebec industries, such industries would simply shift over time to a region where education and productivity were higher but wages the same.

The same sort of reasoning could account for Professor Raynauld's observation that as the size of the plant increases, the difference in productivity between Ontario and Quebec tends to narrow. Large plants probably find it easier to attract better educated people (especially if they pay more money) than do small plants.

In brief it is not at all difficult to accept the fact that any one of the arguments put forward by Professor Raynauld would be sufficient to explain why in 1867 or 1926, say, wage rates in Quebec might be below those in Ontario. It is very difficult, however, to see why the powerful economic pull of lower wage costs per unit of output would not attract industrial activity to Quebec at a sufficient rate to produce a higher rate of growth, and certainly within a human generation (which is several generations of capital) to produce equality of wage rates between two such similar free-trading neighbours.

It seems to us that the failure of incomes in Ontario and Quebec to come into equality can be explained in one of three general ways. In the first place it might be argued that for any

one of a number of reasons labour in Quebec is not as productive as labour in Ontario; that is to say, we are not dealing with exactly the same factor of production when we compare the average member of the work force in Ontario with his counterpart in Quebec. We shall return to this point shortly.

The second possibility is that the work force in Ontario and Quebec is equally productive but that the managers perceive imaginary differences and therefore pay less to Quebec workers. In other words the management class in Quebec holds prejudiced, or at any rate inaccurate, views about the productivity of the Quebec work force. The third possibility is that while the management class in Quebec knows that Quebec workers are as productive as those in Ontario, they have conspired to pay lower wages in that province.

The last point is perhaps the easiest to deal with. In this regard we must remember that while wages and salaries in Quebec are below those in Ontario, they are higher than those in the Maritimes. To explain lower wages in Quebec by an ethnic conspiracy in which the managing Anglo-Saxons conspired against the French-Canadians would invite the conclusion that the white Anglo-Saxon protestants of the Maritimes and the Prairies are also the victims of a similar conspiracy. Only a fairly excited regionalist would seriously give a second thought to such a theory, but in any event we should point out that even if the will existed to establish such a conspiracy by one group or one province, it simply wouldn't work. If productivity in Quebec

were in fact equal to that of Ontario, while wages were lower, it would follow that profits in Quebec would be higher than the profits of those companies located in Ontario. For new firms or for the expansion of old firms, therefore, Quebec locations would be preferred to those in Ontario. It would also follow that with respect to investment, economic growth and the demand for labour, Quebec would soon outstrip Ontario, and that the increased demand for labour in Quebec would produce higher wages in that province. If the conspiracy was going to work, therefore, businessmen would have to have some machinery for preventing each other from taking advantage of a favourable Quebec location. Investment in Quebec would therefore have to be rationed among the conspirators, and the right to locate or expand in Quebec would become a valuable asset.

The conspiracy indeed would have to include French-Canadian businessmen so that they would not expand at the expense of English-speaking and other foreign firms who are either in Quebec or are in a position to invest in the province. This argument, however, has been pursued long enough to demonstrate that a conscious business policy of ethnic exploitation of the workers of any one region or province is exceedingly unlikely.

While we can rule out a conscious and collective conspiracy, we cannot of course rule out the possibility that individuals, perhaps even large number of individuals, are prejudiced or have erroneous views about the productivity of the Quebec

labour force. Let us consider this matter further.

If the work force in Ontario and Quebec was in fact equally productive, while in the minds of the managers (at least the English-speaking managers) the French-Canadian labour force was considered to be less productive, it is possible to imagine that the managers would try to pay French-Canadian workers at a lower wage rate. Let us suppose that because of a temporary excess supply this policy could be pursued and that as in the previous case average wage rates in Quebec were below those in Ontario. However, as before, Quebec would become known as a more profitable place to locate than Ontario, though initially at least managers might be at a loss to explain why. In any event Quebec industry would be rewarded, and in time the demand for labour in Quebec would increase and wages would tend to rise towards the Ontario level¹. But on the basis of this simple analysis it is hard to imagine that such a widespread misconception concerning productivity could exist year after year, especially since people at the management level tend to be quite mobile between provinces, and on the basis of their own experience would correct any such misconception.

The reason we have raised the question of prejudice is not that we think that there is no prejudice in Canada. Such an assumption would be absurd. We do believe, however, that prejudice in the form of a widely held misconception about productivity could not be the main explanation of the persistent tendency for average rewards going to the work force in Quebec to lag behind rewards going to the work force in Ontario. It is necessary

¹ All that a widespread misconception about the productivity of Quebec workers might accomplish is that established firms in Quebec and enlightened firms elsewhere might enjoy abnormally high profits.

therefore for us to examine the proposition that the labour forces in the two provinces are not in fact homogeneous with regard to productivity.

It is our hypothesis that Quebec labour is not in general as productive as labour in Ontario and that the main explanation is to be found in the quantitative and perhaps also in the qualitative differences in education in the two provinces.

While our main emphasis will be on education, it must of course be recognized that labour productivity may be affected by other factors. One individual may be more effective or more productive than another for a number of reasons. In the first place he may have higher native intelligence. While this factor may be quite important in explaining the relative achievement of any two individuals, it does not seem to us to be likely to explain the difference between two large groups of people with such a similar racial background as those in Ontario and Quebec. The second possible explanation is motivation - a complex of attitudes and value systems that determines the willingness of an individual to use his ability for productive purposes in the economic sense.

Motivation itself may be attributable to many different factors. Political ideology could be important in some countries. However, in view of the fact that French and English-speaking students, citizens and workers share equally in the western heritage of Marx, Mill and Voltaire, and since they seem to have quite similar voting patterns, it seems that political differences, if there are any, are unlikely to explain differences in productivity between Ontario and Quebec.

Religion is of course an important source of values and attitudes and much has been written about the possible connection between religion and economic progress. Since Max Weber's, The Protestant Ethic and the Spirit of Capitalism, written just after the turn of the century, many historians and anthropologists have examined the relationships between religion on the one hand and growth, motivation and productivity on the other. There are some a priori and empirical grounds for believing that at least a weak connection between productivity and religion exists, or at least that it used to exist. In western countries, however, one must almost assume that the rules of growth and/or religion have been rewritten and reconciled. In any event we know that at the present time catholic Italy is growing faster than protestant England, and that the rate of economic growth in Buddhist Japan exceeds the sum of the growth rates in Italy and the United Kingdom put together.

It seems to us therefore that it would be surprising if the religious differences that exist between Quebec and Ontario accounted for a significant part of the difference in productivity in these two regions.

There are many other cultural and social factors that have been cited at various times to explain the problems of underdeveloped countries. For example, we know that willingness to take risks (itself related to productivity) is positively related to income. We also know that "extended family systems", i.e. financial responsibility for all one's relatives, can have a negative effect on incentive. Why work harder for more

income if the "reward" is to have more hungry in-laws move in? However, while such considerations may be important in making comparisons between the United States and India, we do not believe that they occupy a central role in explaining regional differences within North America.

In the course of our interviews it was suggested to us that the minority position of the French-Canadians makes them defensive, conservative and inward-looking. The relationship of these attributes to motivation is not clear, but in any event there is some evidence that the non-French, non-Anglo-Saxon Canadians, which numerically are an even weaker minority, have relatively high income achievement and are well represented in management. There is also evidence that French-Canadians outside Quebec have done relatively well.

The full evaluation of the relationship between these cultural factors and productivity must be left to others. For our part we intend to show that education and productivity are very strongly linked. Indeed proving that such a link exists is not the main problem. The main problem comes in establishing the direction of the causal relationship, i.e. does education cause productivity or vice-versa. No one could possibly deny that people with more education are more productive and have higher incomes than those with less, but by itself the correlation which describes such a relationship would neither establish the direction of the cause, nor for that matter would it prove that there is a direct causal relationship at all, since both conditions might be a function of some third factor.

Clearly, men who buy long belts tend to be fat but this does not prove that the purchase of long belts causes the stomach muscles to sag. Parents who have girl babies also tend to have boy babies but this does not prove that girl babies cause boy babies or vice-versa.

This problem has of course been considered by those statisticians, educationalists and economists who have undertaken research on the relationship between education and productivity. All recognize that ideally what is needed is a multi-variable analysis which takes fully into account family, ability, personality, etc. So far we do not have the definitive empirical relationship, but there now exist quite a number of studies which do take into account one or more of the other non-educational factors.

One such study, by Dael Wolfle and Joseph G. Smith¹, compared the earnings of college graduates and non-college graduates who, at the time of graduation from high school, appeared to be comparable with regard to their academic records, intelligence tests and family backgrounds. While of course income varied positively with both family position and intelligence, the strongest relationship was between income and post high school education. It was found that on average the student who went to university earned \$1,400 per annum more than the one who did not. The difference was greater between highly intelligent pairs than between those pairs who were less gifted.

A similar study attempted to correct for environment, "connections", and heredity by examining pairs of brothers.

Once again brothers with more education earned significantly

¹ "The Occupational Value of Education for Superior High School Graduates", Journal of Higher Education, Vol. 27, 1956, pp. 201-213. Reported in Harris, S.E. (Ed.), Higher Education in the United States.

more than those with less.

After considering these and several other studies,

Gary S. Becker in Human Capital concluded:

"Five independent adjustments for differential ability - adjustments that cover such diverse influences as rank in class, I.Q., father's education and occupation, personality, ability to communicate, motivation, and family upbringing - all suggest that college education itself explains most of the unadjusted earnings differential between college and high school graduates. Although any one study is subject to many qualifications, the evidence provided by all taken together has to be given considerable weight. Consequently, it may be concluded that even after adjustment for differential ability, the private rate of return to a typical white, college male graduate would be considerable, say, certainly more than 10%".

In placing the emphasis where we do on education, we can draw support from the work of a group of economists who have been attempting to explain increases in output per person. These economists, who include Solow,¹ Massell,² and Domar,³ have been instrumental in shifting our emphasis from the more conventional lines of thought concerning growth and productivity.

In classical economics, the existence of technological change was recognized, but it was generally treated as an exogenous factor which, from time to time, shifted the production function to the right. Basically, the output of a region grew by the application of more capital and more labour. The quality of the capital and the quality of the labour were often - for good analytical reasons - held constant.

¹ Solow, R., "Technical Change and the Aggregate Production Function", Review of Economic Studies, August 1957, pp. 312-20.

² Massell, B.F., "Capital Formation and Technological Change in United States Manufacturing", Review of Economic Studies, May 1960, pp. 182-188.

³ Domar, Evsey, "On the Measurement of Technological Change", Economic Journal, December 1961, pp. 709-729.

Now we have been led to believe that this approach is basically wrong. The major explanation of the increase in output per worker in the United States cannot be attributed to the increase in capital. It must instead be attributed to the developments in a broad area of human activity embracing scale and technological and administrative change.

In turn technological and administrative change turns out to be little more than the learning and teaching of ideas which are new to the individual, the group, and sometimes to all mankind. This learning and teaching is, of course, the very heart of education.

These studies then give strong support to the thesis that research (which is only a special case of learning and teaching) and education (of the more prosaic kind) deserve first place in explaining the relative growth in productivity of regions of approximately equal cultural backgrounds.

Another group of studies which are relevant to our inquiry have been made by such writers as Schultz⁽¹⁾, Becker⁽²⁾ and Hansen.⁽³⁾ These researchers have recognized the income-creating value of education, and since any expenditure which creates a stream of benefits in the future is by definition an investment, they have brought to bear on the subject the usual tools of analysis appropriate to investment decisions. In brief they have undertaken

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- (1) Schultz, Theodore W., "Capital Formation by Education", Journal of Political Economy, December 1960, pp. 571-583.
 - (2) Becker, Gary S., Human Capital: a Theoretical and Empirical Analysis with special Reference to Education, Columbia University Press.
 - (3) Hansen, W.L., "Total and Private Rates of Return to Investment in Schooling", Journal of Political Economy, April 1963, pp. 128-140.

studies designed to work out the productivity of education as a rate of return on the expenditure on education itself. As a result of these studies it has been found that expenditure on education earns a substantial revenue and from the point of view of either the individual or society is a very sound investment. Professor W. L. Hansen, for example, finds that the rate of return on education works out to something like 12% for society and 17% to the individual.⁽¹⁾

All of these studies support our thesis that education, broadly conceived, is the most important variable in explaining differences in productivity among groups of individuals similar in cultural and racial background. For one reason and another, however, the studies so far cited have not reported their findings in such a way that they can be immediately applied to the problem at hand. An American study which is somewhat more useful for our purposes is that of Mr. H. P. Miller⁽²⁾ which related census data on incomes and educational levels. From this study it can be shown that in the United States each additional year of education, in the range from eight to sixteen years of schooling, is associated with an increase in income of approximately 12% per annum. It may be noted that the correspondence of education and income is not uniform over the years. It makes some difference whether an

(1) The higher rate of return to the individual follows from the fact that neither he nor his family is called upon to pay the full cost of his schooling.

(2) Miller, H.P., "Annual and Lifetime Income in relation to Education: 1939-1959", American Economic Review, December 1960, pp. 962-986.

additional year of schooling is added at the high school or university level and whether it involves the completion of a programme. (The statistics indicate that the increment of income associated with the final year of a high school or a university programme is considerably higher than the preceding or non-graduate years - that is to say a high school drop-out does not receive the same benefit per year from the years he does devote to high school as does the high school graduate.)

While the estimate derived from Miller's data is subject to many qualifications, it does give us at the very least the basis for an educated guess at what might happen to productivity in a similar country or region if the average level of education could be raised by one year.

Two important qualifications must be made, or re-made, concerning the foregoing analysis. The first concerns the quality of education. It is apparent, though perhaps difficult to prove statistically (and dangerous to prove politically!), that the quality of education is not uniform across Canada. We shall have something to say on this matter later on. The second qualification brings us back to the subject of goals. In making the correlation we did between schooling and income, we came close to assuming that the purpose of education was to increase material well-being. We believe that this, in fact, is at least one of the principal goals of any educational system in Canada, though no self-respecting teacher would like to be called a

handmaiden of capitalism and affluence. Nor would he like to be blamed for the increasing misery of the proletariat. There are obviously other highly worthy educational goals which are not closely associated with earning an income and there are many other goals which, worthy or not, we have inherited from the past.

Some education is pure consumption. It is taken or given for the pleasure it affords the student or teacher (whose enjoyment may by no means be equal or even of the same sign). Some part of education may be intended as a social, cultural or religious investment, and finally some part of any education in Canada, we believe, is an economic investment and is really intended to increase the student's economic competence. Since neither time nor education is a free good, either to the individual or to society, it follows that the more educational time and money is devoted to one set of goals, the less will be available for any other.

We are prompted to raise this issue because we feel that in the past at least - if not in the present or in the future - there was a significant difference in the goals as between the educational systems of Ontario and Quebec.

Our thoughts along these lines were prompted by a sentence in Wilson Woodside's The University Question⁽¹⁾. In that book the last chapter is entitled "Quebec is Different", and it begins, "Higher education in French-speaking Canada is

(1) Ryerson, 1958.

very different from that in English-speaking Canada, but more because it is Roman Catholic education than because it is given in the French language. It has remained until very recent years gripped in the pattern of classical education developed in Catholic Europe just after the reformation. In the three centuries between the establishment of the first Jesuit college in Quebec in the early seventeenth century, until the end of the first World War, it changed hardly at all".

In order to present a more balanced view, we believe it should also be pointed out that the pattern of classical education adopted in English monasteries and perpetuated at Oxford and Cambridge has had a long, lingering influence on McGill and the University of Toronto, and through them, on the rest of Canada. One has but to compare the history of business education in English-Canada with that of the United States to see how much English Canada has remained "gripped in the pattern of classical education". It must be added by way of further qualification that the first and for a very long time, the most businesslike, business school in Canada was l'Ecole des Hautes Etudes Commerciales of Montreal.

As a final qualification it would seem that if a new edition of this book were being prepared today, the chapter might more properly be headed "Quebec Was Different". In any event, however, the change which is obviously taking place in Quebec in current education will take many years before it significantly alters the stock of education. The relative position of Quebec

is further complicated by the fact that other regions in North America are not standing still in the matter of education either. It may indeed take a long time before the stock of education, as judged from the point of view of the needs of a modern economic society, equals that of, say, California, where at the present time approximately 40% of the relevant age group is enrolled in university, and of this university population one in six is enrolled in a university programme specifically designed to prepare the student for a position in business management.

One must agree with Wilson Woodside, however, that institutions cannot be classified on the basis of whether they use French or English. In the area of business education, non-clerical l'Ecole des Hautes Etudes Commerciales has its counterpart in the University of Western Ontario. The University of Laval programme, on the other hand, has more closely resembled the programme at St. Dunstan's or St. Francis Xavier - both English-speaking universities - and there is certainly a greater difference between St. Dunstan's and Western Ontario than there is between l'Ecole des Hautes Etudes Commerciales and Western Ontario.

From a comparison of personal experiences by the authors of this study, we suspect that the same kind of differences and similarities would be found if we were to compare the primary and high school programmes in Quebec with protestant (or non-sectarian) and catholic programmes elsewhere. The differences that do exist seem to be based more on religious, than ethnic grounds.

It is obviously difficult to prove or disprove Mr. Woodside's opinion with empirical research. Additional insight might be gained, however, from an as yet unpublished curriculum survey conducted over the past two years by one of the authors of this study on business schools in Canada. This survey at least would seem to support Mr. Woodside's hypothesis. In one instance we have calculated that for a non-Quebec but catholic commerce programme, almost 25% of the lectures are devoted to what could be called religious instruction, or to courses closely attuned to church dogma. In a four-year programme this amounts to the equivalent of one full year⁽¹⁾.

A second piece of empirical evidence can be found in a report dealing with the entrance examinations written for entry to post-graduate business programmes. The report to which we are referring is unfortunately confidential and cannot be quoted, but it has been examined by the authors of this study, and it does seem to be a valid generalization that students coming from church⁽²⁾-controlled universities, or universities which graduate students after only 15 years of schooling (programmes that require either eleven years of primary education and four of university, or twelve primary and three university) have below-average scores. From the below-average performance

(1) This creates an interesting problem in resource allocation: how does a society allocate scarce educational time and money between courses designed to promote economic well-being in the short-run and non-economic well-being in the long run when, according to Keynes, "We are all dead?"

(2) We say church rather than Catholic schools because the above generalization seems to apply to all church institutions. It so happens that most of the universities controlled by religious bodies are in fact Catholic.

of graduates, one might easily conclude that religious education absorbs about one year of a student's time; or, to put the matter differently, with the kind of programme typical of a church-controlled university, a student may require an extra year to make the same investment in productivity-increasing knowledge. What this means is that a Commerce major from a church-controlled university may have to complete all or part of a Master's degree to be in the same economic position as a Baccalaureate holder from a non-church school.

In this chapter, we have been concerned with productivity and incomes in Quebec, especially as they compare with the benchmark of Ontario. While we have not so far been concerned explicitly with either corporate practices and policies or ethnicity, these two factors are of course basic to our analysis. Wages and salaries are determined in an industrial and commercial market place dominated by corporate firms. It is important therefore for us to know whether there is any reason to suspect that firms operating in Quebec obey a different set of rules than they do elsewhere, especially in determining wage and salary policy. It seems to us that there is no evidence which suggests that they do.

It is our conclusion that insofar as wage and salary policy is concerned, there is no a priori evidence which suggests that ethnicity is a factor entering into corporate practices and policies concerning wages; on the contrary, we believe that there is good evidence which suggests that the differences that are observed in incomes in Ontario and Quebec can best be explained by differences in productivity, which in turn reflects more than any other single factor the quantity and quality of education in the two provinces.

2.5.3 Professional Achievement

2.5.3.1 Introduction

The previous chapter was concerned with productivity of the total work force in Ontario and Quebec. The analysis suggested, though it did not prove, that the difference in the educational level of the work force in the two provinces was probably the main reason for the persistently higher level of income in Ontario.

One of the shortcomings of the analysis, however, is that it made no allowance for qualitative differences in education or for differences in the "educational mix".

In trying to solve this problem we reasoned that it might be possible to make more precise measurements and therefore draw more valid conclusions if, instead of working with the total labour force, we could single out groups which are rather more homogeneous from the educational point of view. The groups, it seemed to us, which were likely to be most homogeneous were those professions taught at the university level. In some cases minimum standards are imposed by professional bodies, and in all cases there is a good deal of feed-back to the university departments originating from conferences, professional journals and students who go on to post-graduate work. In this chapter we attempt to deal with the relationship between income and ethnicity in the professions of engineering and architecture as well as science.

The reasons for choosing these particular vocations is simply that data were available. The empirical base for this chapter is a survey conducted by the Department of Labour in the years 1962, 1963 and 1964 which was sent out each year

to about one-third of the engineers, architects and scientists in the Province of Quebec. The survey also covered other provinces and other years. For the most part our analysis is confined to the 1962-64 survey results for Quebec but where the statistics were applicable we also examined the Ontario survey to see the relative position of the graduates of French-language and other universities who were working in that Province.

This questionnaire covered functions performed, including management, (which provided much of the basic data for the next chapter), educational level, university in which the undergraduate degree was obtained, and salary. The survey was not designed specifically with either ethnicity or corporate practices and policies in mind; if it had been, it would have been even more relevant to the problem at hand. Yet the information is useful, and we are indeed very fortunate to have it. Most of the respondents were employed in industry or by industry - in the case of consultants - and their income achievement must in aggregate be a reflection of corporate practices and policies.

The main shortcoming of the survey from our particular point of view is that it did not ask the respondent to indicate ethnic origin. However, it did ask for the university in which the respondent studied for his first degree. Thus it seemed reasonable to assume that if we considered the graduates of the four French-language universities, the University of Montreal, Laval, Sherbrooke and L'Ecole des Beaux Arts, we would have a group which would be very close to being 100 percent French-Canadian. Graduates of all other universities in Canada and elsewhere in the world were lumped together in a category modestly designated as "other". We realize

of course that there are many French-Canadians in the bilingual universities such as Ottawa, and in English-speaking universities such as McGill. We reasoned, however, that the proportion of French-Canadians in these other universities would be small enough that their effect on the total analysis could be ignored.

2.5.3.2 Architects

The first professional group which we have analyzed is the architects. The sample is made up of 208 individuals of whom 101 are graduates of the two French-language universities that grant degrees in architecture - the University of Montreal and Laval - and 107 graduated from all others. The graph and table on the following page show the salaries or earnings of architects by years of graduation for the French-language group and all others, and the average salary of French-Canadian graduates expressed as a percentage of the average salary of all graduates.

In this as in all subsequent graphs and tables in this chapter dealing with professional achievement, the data refer to professionals who are neither in education nor performing a management function.

In interpreting this and other similar graphs and tables which will present the data for scientists and engineers, one must consider the number of graduates shown in the table at the bottom of the page for each class or each span of years. The data presented constitute a sample of about 20% of the engineers, architects and scientists in Quebec, but care must be taken not to put too much weight on the figures for any particular graduation class if the number in it is small.

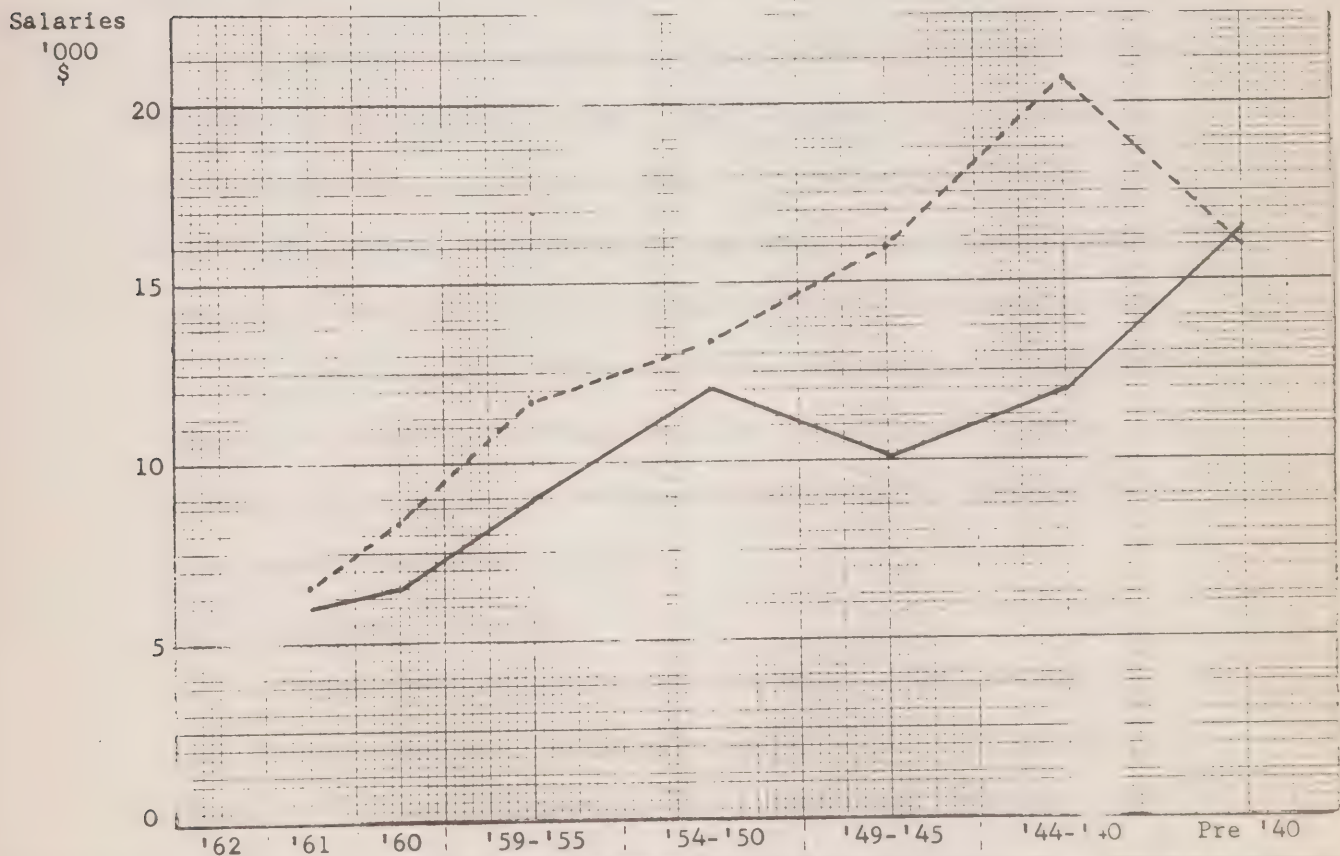
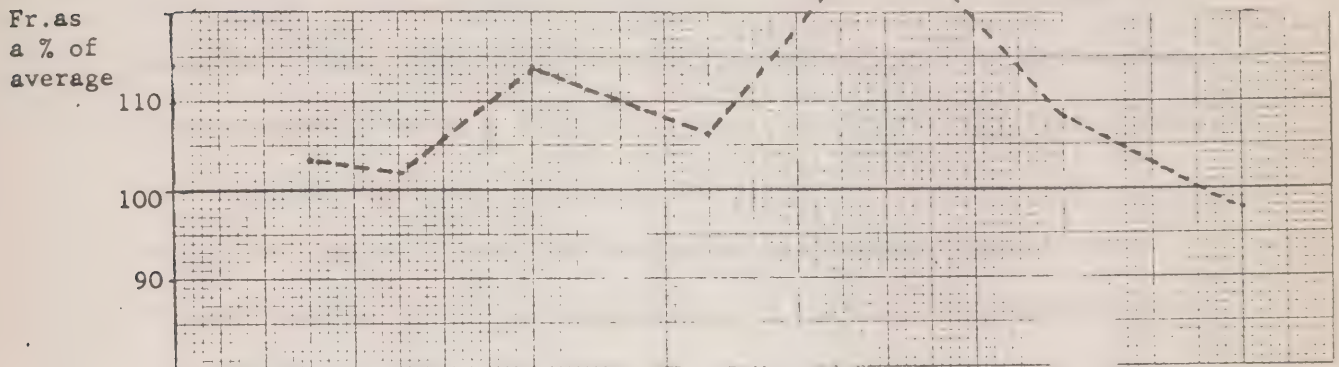
CHART 2.5.3.2.1
PROFESSIONAL ACHIEVEMENT

Survey Que. Combined

DISCIPLINE Architecture LEVEL Bachelor

Upper Graph: Salary of graduates of French-language Universities as a percent of average.

Lower Graph: Average salaries of graduates of French-language Universities ----- and other Universities ————



Number	Fr.	-	6	5	28	17	7	9	29
	Other	-	4	1	29	30	13	2	28
Salary	Fr.	-	6500	7300	11732	13441	16000	20777	16034
	Other	-	6000	6500	8948	12100	10115	12000	16571
Salary % of Av	Fr.	-	103.2	101.9	113.7	106.8	131.4	108.3	98.4
	Other	-	95.2	90.7	86.8	96.2	83.1	62.6	101.7

On the basis of this sample we can see that the French-Canadian architects compare very favourably with all others practising in the Province of Quebec. Indeed save in the pre-1940 category where they lagged by only 2.6 percent, the French-Canadians have incomes averaging a little better than \$2,000 more than graduates of other universities. For this profession at least one must conclude that on average the education and productivity of the French-Canadian architect is superior to that of the graduate of other universities, or that there is some discrimination at work which operates on balance in favour of French-Canadians. Certainly it would be very hard to maintain that in this profession the French-Canadian is at any disadvantage. This suggests that if there is any tendency for some large national or foreign firms to seek out non-French-Canadian architects as employees or consultants, this tendency is more than offset by firms with just the opposite bias.

In our sample there were only 8 architects with higher degrees (all Master's) of whom only one was a French-Canadian. No conclusion therefore is warranted concerning the performance of those beyond the Bachelor level.

2.5.3.3 Science Graduates

The survey of scientists in Quebec, which provides the basis for this analysis, gives us information on 1,455 people considered to be at the Bachelor level. Of these, 599 came from the French-language universities and 856 from all others.

Chart 2.5.3.3.1 on the next page gives the income experience of all the science graduates in our sample. At first glance it appears that the experience of the French-Canadian

CHART 2.5.3.3.1
PROFESSIONAL ACHIEVEMENT

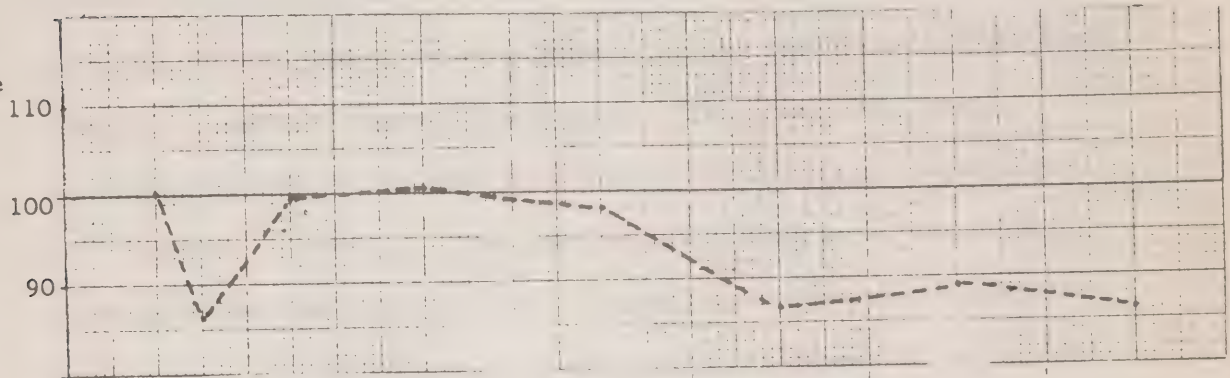
Survey Que. Combined

DISCIPLINE All Science LEVEL Bachelor

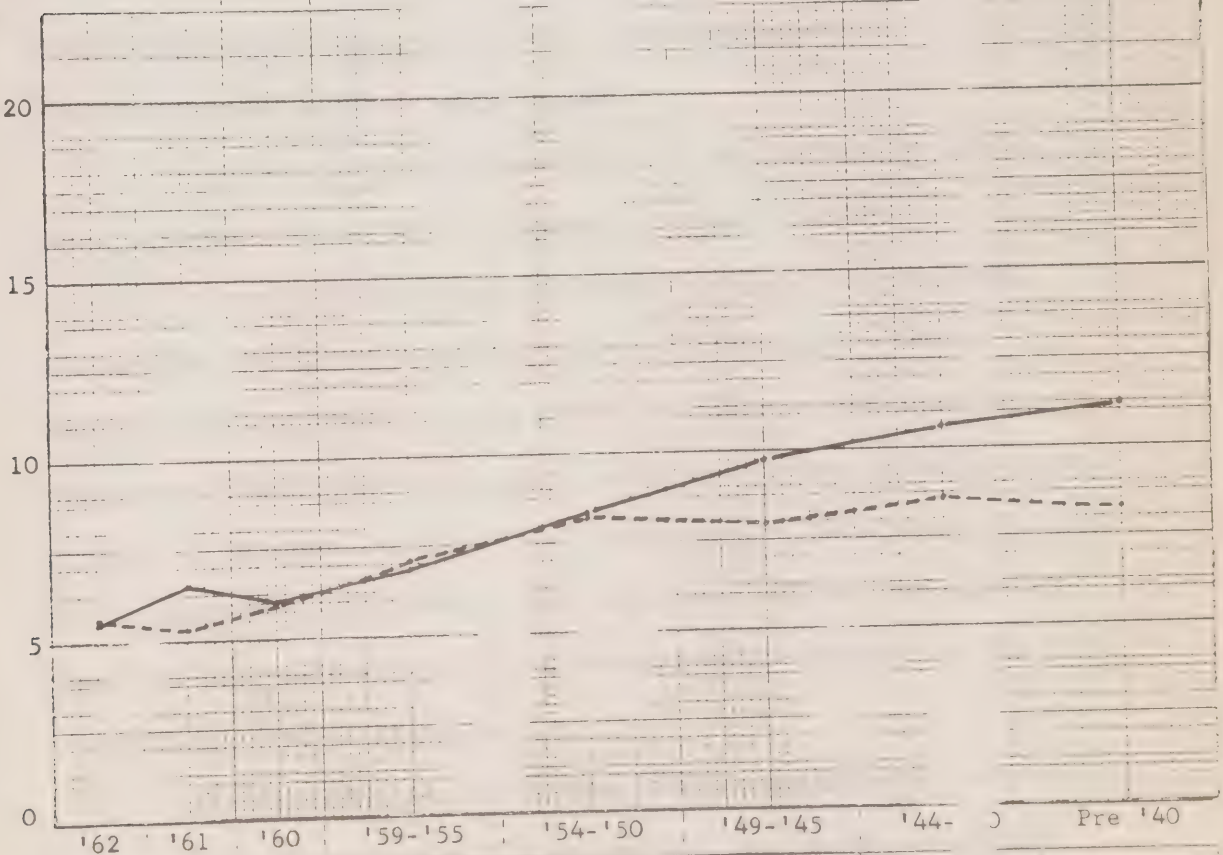
Upper Graph: Salary of graduates of French-language Universities as a percent of average.

Lower Graph: Average salaries of graduates of French-language Universities ----- and other Universities -----

Fr. as
a % of
average



Salaries
'000
\$



Number	Fr.	11	18	25	154	114	84	63	130
	Othe	1	30	49	219	230	153	70	174
Salary	Fr.	5590	5277	5940	7103	8254	7928	8674	8319
	Othe	5500	6600	5989	7061	8447	9767	10664	11221
Salary		100.1	86.5	99.5	100.3	98.5	87.0	89.2	86.6
% of Av O		98.5	108.1	100.3	99.8	100.8	107.1	109.7	116.8

scientist is in sharp contrast to that of the architect whom we examined in a previous section. Whereas the architects from the French-language universities had on balance a significant advantage over all others, the science graduates of the same institutions have, overall, a decided income disadvantage. Those who left their universities before 1950 are at a salary disadvantage ranging from 11 to almost 15 percent. The more recent graduates on the other hand have done very much better. Indeed, apart from the anomaly of 1961 (when both the French and other graduates seemed to be out of line not only with each other, but also with their fellow graduates in the classes on either side), the French-language and other science graduates seemed to be on about a par.

The very different experience of the architects and the scientists permits two quite dissimilar interpretations. On the one hand it may be argued that the French-language architectural schools have been, and continue to be, of considerably better quality than the average of all others and that by the same token the science facilities in the same universities are, or rather were, of about 10 percent lower quality. According to this interpretation of the data, the difference in the experience of the graduates of these two professions might be attributed to the quality of the professional courses themselves.

A second hypothesis is that the French-Canadian scientist is more likely to work directly for an English-language firm and therefore, especially as he gets older, he becomes more vulnerable to discrimination. Furthermore, if he has a language disability, it will likely become a more serious disadvantage in a large English company as he grows older.

While the French-Canadian architect must also do a considerable amount of work for English-language firms, the provincial and local governments are certainly a more significant employer, and moreover through their control of building permits, zoning laws and the like, they are able to protect (and apparently overprotect) the interests of the French-Canadian professional.

It need hardly be added that these two theories, each of which might be supported by the two charts so far presented, have rather different policy implications, and it is important therefore to search for further evidence.

This search led us to look behind the aggregate figures for scientists. Unlike architecture, which is a recognized, long-established profession with something approaching uniformity of qualifications imposed by the professional associations, building codes, and so on, science covers a multitude of areas in which, at the terminal Bachelor level at least, there is not the same machinery for insuring even an approximate uniformity of quality or content. It is quite possible therefore that the science graduates of the French-language universities do not have the same mix of skills and training as their colleagues coming from other institutions.

How different the two groups of science graduates in our study are can be seen from the analysis in the following table which shows the number and average salary of French and other pre-1940 graduates in each of the science categories for which we have information.

TABLE 2.5.3.3.2

Number and Average Salary of French and
Other Science Majors graduating prior to 1940

Branch of Science	French		Other	
	<u>Number</u>	<u>Average Salary</u>	<u>Number</u>	<u>Average Salary</u>
1. Biology			2	10,500
2. Mathematics			2	9,500
3. Geology			4	10,000
4. General Science			16	11,300
5. Other Science	1	40,000	3	9,200
6. Chemistry	13	13,300	42	11,300
7. Other Courses	<u>116</u>	7,500	<u>35</u>	11,500
8. Total Science	130		104	

It is readily apparent that the full explanation of why the pre-1940 graduates of French-language universities have not prospered must lie in the nature of the "other courses" and the suitability of these courses to today's needs. The 13 chemists and the 1 "other" scientist in this age group have done very well; in fact their incomes happen to be above average.

While we lacked the time and the resources to go into this problem of educational quality in any depth, we did determine that insofar as the French-language universities are concerned it seems more than likely that especially in the early years the "other courses" included the "cours scientifique" which until fairly recently was parallel to the cours classique, and was not generally considered either in France or in other North American universities to be the equivalent of a full undergraduate university degree.

So far as the previous table is concerned, the number of French-Canadians in the group does not permit us to be too dogmatic, but the evidence of the table suggests that it is the nature of the

course rather than ethnic origin that determines professional achievement.

In searching for further evidence we found that unfortunately the only science course which is common to French-language and other universities and for which there is both a reasonable degree of homogeneity and a sufficient number in our sample to make a comparison meaningful over time is chemistry. Chart 2.5.3.3.3, which gives absolute and relative income performance of the French and other graduates, appears on the following page.

While the graduate in chemistry from a French-language university is at an overall disadvantage, the income handicap is slight. On average it is under 2 percent.

Although "general science" would hardly constitute a homogeneous discipline, it is, apart from chemistry, the only other scientific designation in which we have a reasonable number of cases. Even so there are only 22 graduates from French-language universities in this category. The experience of the general science graduates from French-language and other universities is shown in Chart 2.5.3.3.4 on page 64. The pattern of relative incomes, it will be observed, is rather similar to that of chemistry. The weighted income disadvantage, for what it is worth, is just over 4 percent. But again it is more than likely that comparing general science in the French-language and other universities 10 and more years ago is rather like comparing apples and oranges.

Table 2.5.3.3.2, which shows the distribution by discipline of the pre-1940 graduates of the French-language and other universities,

CHART 2.5.3.3.3
PROFESSIONAL ACHIEVEMENT

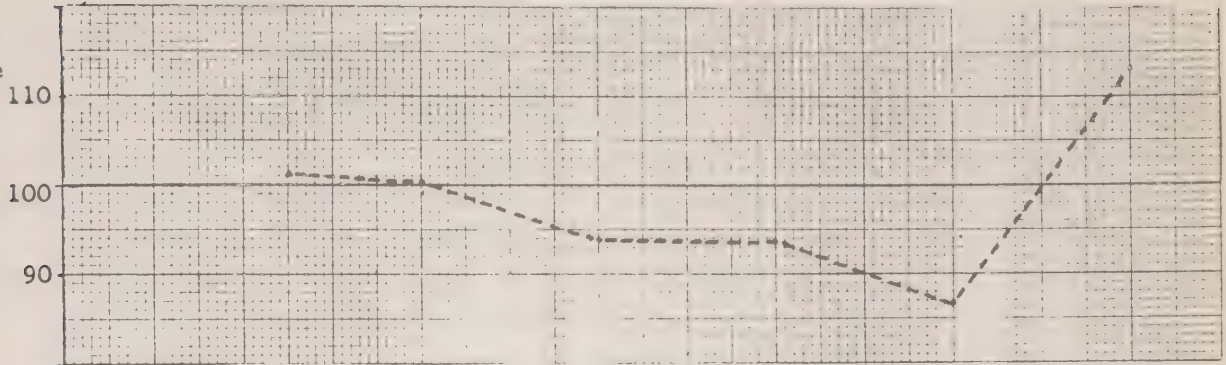
Survey Que. Combined

DISCIPLINE Chemistry LEVEL Bachelor

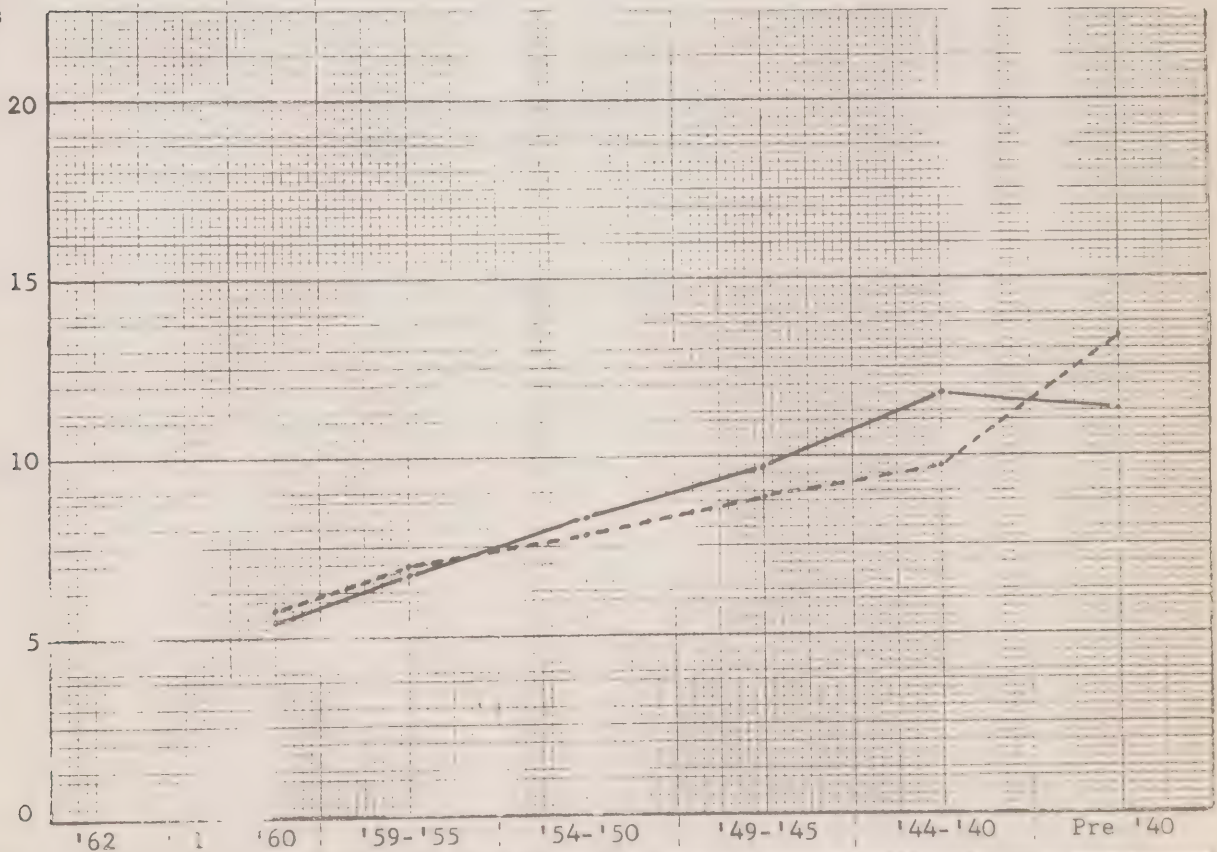
Upper Graph: Salary of graduates of French-language Universities
as a percent of average.

Lower Graph: Average salaries of graduates of French-language
Universities ----- and other Universities ———

Fr.as
a % of
average



Salaries
'000
\$



		'62	'60	'59-'55	'54-'50	'49-'45	'44-'40	Pre '40
Number	Fr.	1	6	24	15	19	10	13
	Other	-	3	32	55	35	28	42
Salary	Fr.	5500	5833	6958	7833	8815	9800	13346
	Other	-	6500	5500	6906	8472	9714	11309
Salary	Fr.	-	101.9	100.4	94.0	93.8	86.8	113.2
% of Av	Other	-	96.1	99.7	101.6	103.4	104.7	95.9

CHART 2.5.3.3.4
PROFESSIONAL ACHIEVEMENT

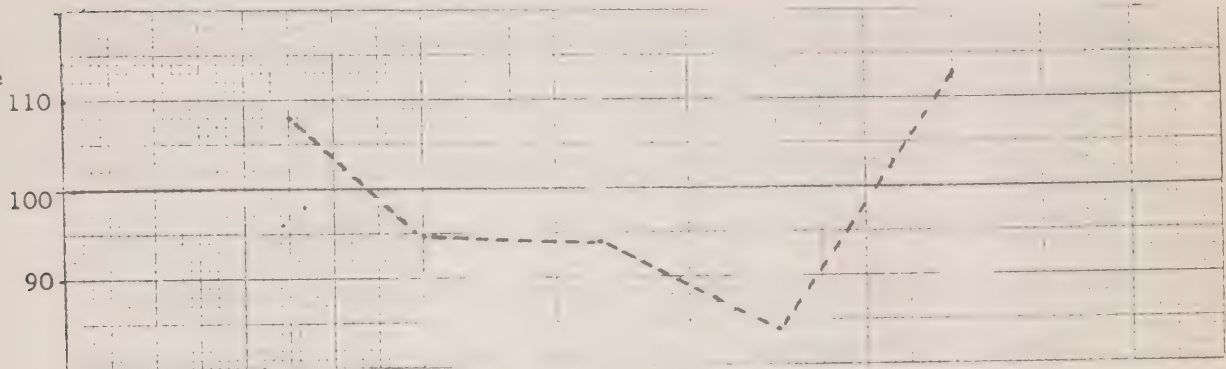
Survey Que. Combined

DISCIPLINE General Science LEVEL Bachelor

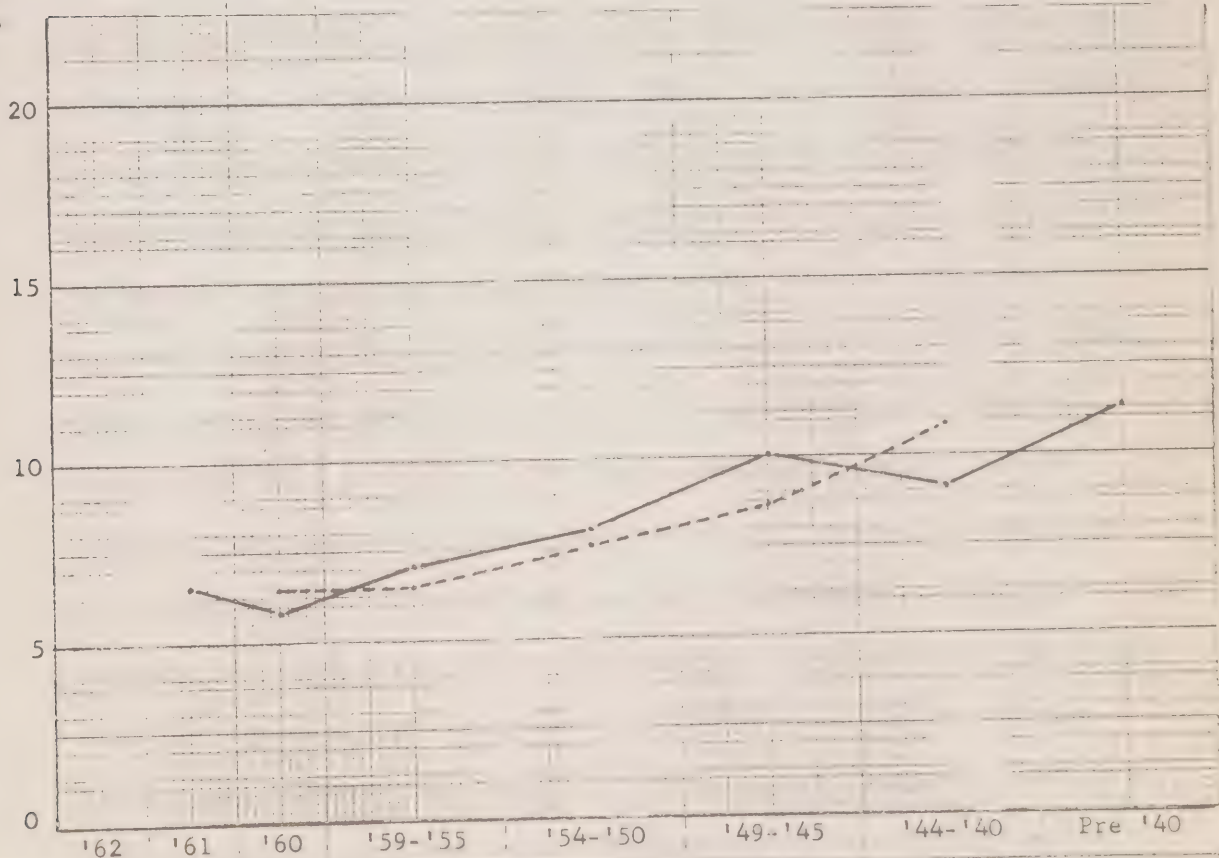
Upper Graph: Salary of graduates of French-language Universities
as a percent of average.

Lower Graph: Average salaries of graduates of French-language
Universities ----- and other Universities ———

Fr. as
a % of
average



Salaries
'000
\$



Number	Fr.	-	-	1	6	8	4	3	0
Other	-	28	37	112	83	47	9	16	-
Salary	Fr.	-	6500	6666	7625	8750	10833	-	-
Other	-	6571	5986	7035	8150	10553	9166	11343	-
Salary	Fr.	-	108.3	95.0	94.1	84.1	113.0	-	-
% of Av	Other	-	99.8	100.3	100.6	101.4	85.7	-	-

made it apparent that comparable information is scanty for science undergraduates with degree courses. In our sample, in addition to the 109 French-Canadian graduates in chemistry and general science, there were only 31 degree holders in mathematics and physics, biology, mathematics, geology and other science in graduation-year classes in which there were also graduates from other universities. Only for these 140 individuals was it possible to compare the overall income performance with that of graduates of other universities in the same graduating class and science discipline. Individually of course comparisons between categories of discipline and graduating class are not statistically significant. For example, to be told that the 2 mathematics and physics graduates from a French-language university who graduated between '55 and '59 had the same average income as the 4 mathematics and physics majors who graduated from other universities in the same period does not prove very much. Collectively, however, the total experience of the French-Canadian graduates is worth noting, and we found that the 140 French-Canadian graduates for whom such comparisons were possible in the above categories (which include chemistry and general science) had incomes 1.67 percent below those of graduates of other universities. In other words, a crude attempt to compare like with like reduces the apparent disadvantage of the French-Canadian graduate from 5.5 percent (which is the weighted average disadvantage apparent in Chart 2.5.3.3.1) to 1.67 percent. This would seem to indicate that the income disadvantage of the French-Canadian scientist with a Bachelor's degree is not great in industry and that the apparent disadvantage shown in Chart 2.5.3.3.1 is more a function of the nature and mix of university programmes than of ethnic origin.

It also confirms that the incidence of almost all of the income disadvantage experienced by French-Canadian science graduates is focussed on those who are classified under "other courses". The 301 pre-1951 graduates who elected "other courses" are at an income disadvantage of well over 10 percent vis-à-vis science graduates in the same age group who elected to take other programmes. For example, their experience is very different from that of their colleagues from the same French-language universities who elected chemistry or even general science.

The next test we performed was to examine the Ontario survey of the Department of Labour to determine the income experience of the graduates of the French-language universities who were working in that Province. As it happens there were only 18 individuals doing professional, non-management, non-educational work in Ontario during the period of the survey. Their graduating class, professional category and average salary are shown in the following table, along with similar data for the other science graduates with whom direct comparisons could be made. Also shown is the average salary of the French-Canadian graduate as a percentage of the average salary of all those in our sample in that particular category of science and graduating class.

The number of individuals in this table is much too small to allow us to be at all dogmatic, but it is interesting and perhaps somewhat surprising that the average French-Canadian graduate working in Ontario has just a tiny (and far from statistically-significant) income advantage.

One might reason that if discrimination or prejudice

TABLE 2.5.3.3.5

18 Graduates of French-Language Universities working in Ontario compared with graduates of Other Universities in the same Discipline-Graduation-year Category

<u>Discipline</u>	<u>Graduation Year</u>	<u>French</u>		<u>Other</u>		<u>French as a percent of average</u>
		<u>#</u>	<u>Average Salary</u>	<u>#</u>	<u>Average Salary</u>	
Chemistry	55 - 59	3	7,500	47	7,202	103.9
	50 - 54	3	8,500	117	8,286	102.5
	40 - 44	1	7,500	42	10,285	73.4
	Pre 40	2	11,500	93	10,139	113.1
General Science	55 - 59	1	6,500	63	6,547	99.3
	50 - 54	2	6,500	50	7,930	82.5
Geology	55 - 59	1	6,500	27	7,018	92.9
	50 - 54	1	10,500	23	7,760	133.3
Maths & Physics	50 - 54	4	8,750	16	8,937	98.3

18

were an important factor in corporation practices and policies, it would be most likely to occur outside Quebec where firms would have little to fear from either overt action on the part of the Quebec government or from social or customer pressure.

It is also of some interest to note the fact that not one individual with an "other course" academic background appeared in the Ontario sample; yet such individuals made up the vast majority (446 out of 599) of the French-Canadian scientists in the Quebec survey. As can be seen, all 18 individuals had what might be called more science-oriented science programmes. If the "other course" scientists, many of whom are probably from the classical colleges, had been as mobile as their fellow science students from the same universities, we should expect to find over 50 of them in the Ontario sample. This bit of evidence lends some support to the proposition that with more and better education, comes greater mobility.

In order to explore further the relationship between education and achievement, we examined the incomes of those graduates

of French-language and other universities who had acquired Master's or Doctoral degrees. In the combined '62, '63 and '64 survey for Quebec, we found 70 French-Canadians who held Master's or Licence degrees and 59 who held Ph.D.'s, all of whom, as before, were performing non-managerial, non-educational functions.

The results of this analysis are presented in tables 2.5.3.3.6 and 2.5.3.3.7. The discipline and graduation-class columns in both tables refer to the Bachelor programme. We have assumed that the Master's and Ph.D. degrees were taken in the same field, but of course there may be exceptions. The numbers shown under "French" and "others" refer to the number of undergraduates in each discipline and in each graduation class who went on to a Master's degree in the case of Table 2.5.3.3.6 and to the Ph.D. degree in Table 2.5.3.3.7.

The right-hand column shows the incomes of those holders of Master's or Doctoral degrees who took their undergraduate training at a French-language university as a percent of comparable professionals who took their undergraduate training at some other university.

Even a casual comparison of the relative income achievement of the French-Canadian and other professionals at this educational level presents quite a remarkable anomaly. At the Master's level the weighted average income disadvantage of the graduate of the French-language university is 13.4 percent. For the Ph.D. graduate the corresponding disadvantage of the French-Canadian is only 1.1 percent, and if those doctoral graduates with "other courses" in their undergraduate backgrounds are eliminated from the sample,

TABLE 2.5.3.3.6

70 Graduates with Master's or Licence Degrees working in Quebec who obtained undergraduate degrees at French-Language Universities compared with Master's graduates from other Universities in the same Discipline-Graduation-Year (of First Degree) Category

<u>Discipline</u>	<u>Graduation Year</u>	<u>French</u>		<u>Other</u>		<u>French as a percent of average</u>
		<u>Number</u>	<u>Salary</u>	<u>Number</u>	<u>Salary</u>	
Chemistry	55 - 59	5	6,300	1	7,500	96.9
	50 - 54	1	7,500	2	6,000	115.4
	45 - 49	2	9,500	3	10,833	92.2
	40 - 44	3	6,833	12	12,250	61.2
	pre 40	4	8,000	17	12,117	70.6
Gen. Science	55 - 59	1	6,500	1	9,500	81.3
	40 - 44	1	8,500	1	14,500	73.9
	pre 40	2	9,000	4	10,000	93.1
Geology	55 - 59	1	7,500	3	6,500	111.1
	50 - 54	1	9,500	2	9,000	103.6
Mathematics	nil					
Other Science	55 - 59	4	6,250	1	9,500	90.6
	45 - 49	1	5,500	1	14,500	55.0
Maths & Physics	55 - 59	2	6,500	3	7,500	91.6
	50 - 54	2	8,500	1	9,500	96.2
	40 - 44	1	7,500	1	10,500	83.3
Other courses	55 - 59	5	6,300	5	6,700	96.9
	50 - 54	9	6,611	11	9,045	83.2
	45 - 49	6	7,833	5	8,500	96.3
	40 - 44	8	7,750	5	9,100	93.7
	pre 40	11	7,772	15	12,366	74.6
Total		70		94		

TABLE 2.5.3.3.7

59 Graduates with Ph.D. degrees working in Quebec who obtained undergraduate degrees at French-language Universities compared with Doctoral Graduates from other Universities in the same Discipline-Graduation-Year (of First Degree) Category

<u>Discipline</u>	<u>Graduation Year</u>	<u>French</u>		<u>Other</u>		<u>French as a percent of average</u>
		<u>Number</u>	<u>Salary</u>	<u>Number</u>	<u>Salary</u>	
Biology	45 - 49	1	10,500	2	10,000	103.3
	40 - 44	1	8,500	1	14,500	73.9
	Pre 40	1	11,500	1	3,500	153.3
Chemistry	55 - 59	6	8,500	4	9,000	97.7
	50 - 54	8	9,375	19	9,710	97.5
	45 - 49	5	11,900	10	11,700	101.1
	Pre 40	6	13,166	26	13,865	95.9
Gen. Science	45 - 49	1	12,500	2	11,500	105.6
	Pre 40	1	11,500	5	10,900	104.6
Geology	50 - 54	2	9,500	3	9,800	97.9
Mathematics	Nil					
Maths & Physics	55 - 59	1	9,500	1	6,500	118.8
	50 - 54	3	11,166	1	11,500	99.3
Other courses	55 - 59	4	7,750	7	8,357	95.3
	50 - 54	8	9,000	9	9,111	99.4
	45 - 49	2	8,000	3	10,833	82.5
	40 - 44	4	7,500	1	10,500	92.6
	Pre 40	<u>5</u>	11,100	<u>2</u>	9,500	104.3
Total		59		97		

the French-Canadian Ph.D. is at a slight income advantage.

The explanation for this rather remarkable phenomenon is to be found, we believe, in the confusion over the standard and indeed even in the translation of the term "Licence". If the cours classique or the cours scientifique is considered as a "Bachelor's" degree, then the "Licence", which generally involves only one year more of study, might be translated into a "Master's" degree. Certainly many holders of a Licence report their academic level to be equivalent to that of a Master's degree, and undoubtedly many of the graduates in our sample reported their educational level in this way.

Any suggestion that the French-Canadian holders of Master's or Licence degrees are held back by ethnicity is difficult to reconcile with the relative income achievement of the French-Canadian holders of Bachelor's degrees (apart from those with an "other course") on the one hand, and with those who have gone on to a Ph.D. on the other.

As a further check on the possible role of prejudice on corporate practices and policies, we examined the Ontario survey to determine the relative achievement of graduates of the French-language universities who held Master's or Ph.D. degrees and who were working in the English environment of Ontario. There are only 9 such individuals holding a Master's (or Licence) degree and 15 holding Ph.D.'s. Their distribution by undergraduate discipline and year of graduation (at the first degree level) is given in Table 2.5.3.3.8 and Table 2.5.3.3.9. The overall income disadvantage of the French-Canadian in

TABLE 2.5.3.3.8

9 Graduates with Master's or Licence Degrees working in Ontario who obtained undergraduate degrees at French-Language Universities compared with Master's Graduates from Other Universities in the same Discipline-Graduation-Year (of First Degree) Category

<u>Discipline</u>	<u>Graduation Year</u>	<u>French</u>		<u>Other</u>		<u>French as a percent of average</u>
		<u>Number</u>	<u>Salary</u>	<u>Number</u>	<u>Salary</u>	
Biology	50 - 54	1	5,500	8	7,250	78.0
Chemistry	55 - 59	1	9,500	4	7,750	117.3
General Science	50 - 54	1	9,500	1	7,500	116.3
Maths & Physics	55 - 59	2	7,000	6	6,666	103.7
	50 - 54	2	8,500	11	8,863	96.5
	45 - 49	1	7,500	4	9,500	82.4
Other courses	Pre 40	<u>1</u>	7,500	38	10,236	73.8
Total		9				

TABLE 2.5.3.3.9

15 Graduates with Ph.D. degrees working in Ontario who obtained undergraduate degrees at French-language universities compared with Doctoral Graduates from other Universities in the same Discipline-Graduation-Year (of First Degree) Category

<u>Discipline</u>	<u>Graduation Year</u>	<u>French</u>		<u>Other</u>		<u>French as a percent of average</u>
		<u>Number</u>	<u>Salary</u>	<u>Number</u>	<u>Salary</u>	
Biology	40 - 44	1	9,500	10	10,500	91.3
Chemistry	50 - 54	3	9,833	40	9,300	105.3
	45 - 49	3	10,500	44	10,295	101.9
	Pre 40	2	11,500	56	12,589	91.6
General Science	50 - 54	1	10,500	10	9,000	114.9
Geology	50 - 54	1	8,500	10	9,500	90.3
	45 - 49	1	14,500	24	10,541	135.5
Maths & Physics	50 - 54	1	8,500	14	9,714	88.2
Other courses	50 - 54	1	7,500	54	8,796	85.5
	45 - 49	<u>1</u>	7,500	48	10,697	70.5
Total		15				

our sample with a Master's degree is 3.5 percent, and the disadvantage of the holder of a Ph.D. is 1.3 percent (compared with an overall disadvantage of Master's and Ph.D. degrees in Quebec of 13.4 and 1.1 respectively).

With regard to the rather different income experience of Master's degree holders in Ontario and Quebec, the most probable explanation seems to lie again in the Licence. We noted earlier that French-Canadians with a cours scientifique appear to be much less mobile than those with regular Bachelor's degrees in science. The same may also be true of those with a Licence. It is probably true that the 9 French-Canadian professionals in Ontario have for the most part regular Master's degrees. This suspicion is strengthened by the fact that if we take out from our sample of Master's graduates the one individual with an undergraduate "other course" who is the individual most likely to hold a Licence on top of a cours scientifique, the remaining 8 French-Canadians are about on a par with all others insofar as income is concerned.

With regard to the Ph.D.'s, it is strongly consistent with previous observations that the 2 individual scientists in our sample who started out their university careers with an "other course" are now at the greatest income disadvantage. To put the matter a little differently, if we take out these 2 individuals from our Ontario sample, the 1.3 percent income disadvantage of the French-Canadian Ph.D. working in Ontario becomes an overall advantage of 2 percent.

Insofar as we can infer anything about corporate practices and policies from the income achievement of French-Canadian and other scientists at the Bachelor, Master and Ph.D. levels, it appears

that, for professional work at least, companies do not distinguish between employees on the basis of ethnicity and that a person with about the same training gets about the same income.

It must be pointed out to those who may hold that this analysis clashes with "conventional wisdom" or "common observation" on these matters that our data has gone at least to some extent beyond the crude category of scientist and has attempted to make comparisons of professionals with about the same educational background, the same age, and the same specialization - a subtlety which could hardly be introduced into the everyday observation of friends, relatives and acquaintances. It is certainly apparent from our data that, especially for the older age groups, the "mix" of science training of French and other Canadians is very different, and moreover that the kind of training that other Canadians have received appears to give them an advantage in the market place.

The corollary to this is that to the extent that the French-Canadian scientist is at an income disadvantage, most of his lost income must be attributed to the university programme which he chose or which, because of lack of alternatives, he was forced to take, rather than to his ethnicity or to the language handicap which he may have.

One other interesting observation which can be made concerning our analysis of the French-Canadian scientist in Ontario and Quebec concerns the effect of education on mobility. Of the professional scientists in our sample who graduated with a Bachelor's degree from French-language universities, fewer than 3 percent are to be found in Ontario, and, as we have already observed, the mobility

of those with an "other course" is approximately zero. At the Master's or Licence level, the French-Canadians appear to be over three times as mobile. Just over 10 percent of the French-Canadian professionals at the Master's level (non-management and non-educational) in our combined Ontario and Quebec sample work in Ontario. And again the relative income achievement of those in Ontario vis-à-vis those in Quebec suggests that the mobility of the holders of the regular Master's degree is higher than the mobility of those who hold only a Licence.

Finally, of the professionals in our sample who hold Ph.D.'s, we find that over 20 percent of the people in Ontario and Quebec who started out in French-language universities in Quebec are working in Ontario.

It can hardly be doubted that higher education makes individuals more mobile.

2.5.3.4 Engineers

The following analysis of the income experience of engineers is based on the data collected on nearly 8,000 graduates in Quebec of whom well over 2,000 are graduates of the four French-language universities. For certain purposes reference will be made to a survey of a somewhat larger number of engineers living and working in Ontario.

Chart 2.5.3.4.1 on the following page relates to 4,170 graduates at the Bachelor's level who are in neither management nor education. It shows the average earnings reported for the years 1961, 1962 and 1963 for graduates of French-speaking universities

CHART 2.5.3.4.1
PROFESSIONAL ACHIEVEMENT

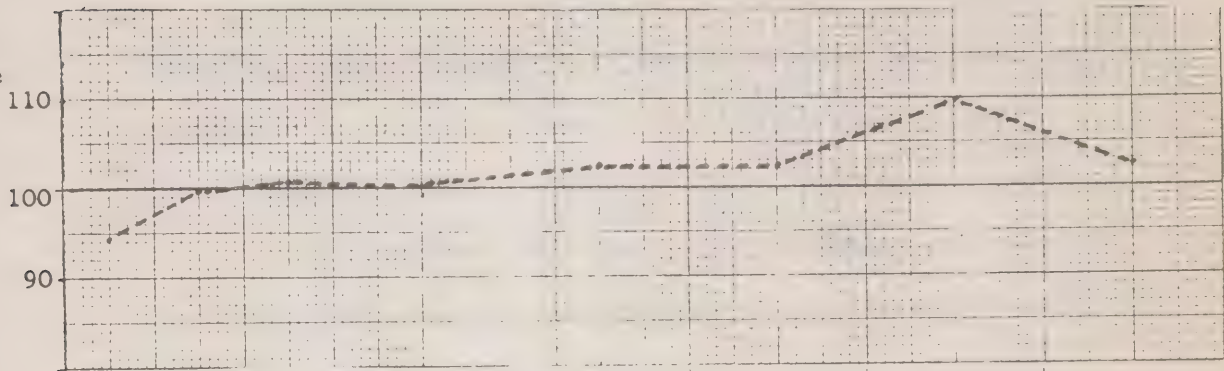
Survey Que. Combined

DISCIPLINE Engineering-All Branches LEVEL Bachelor

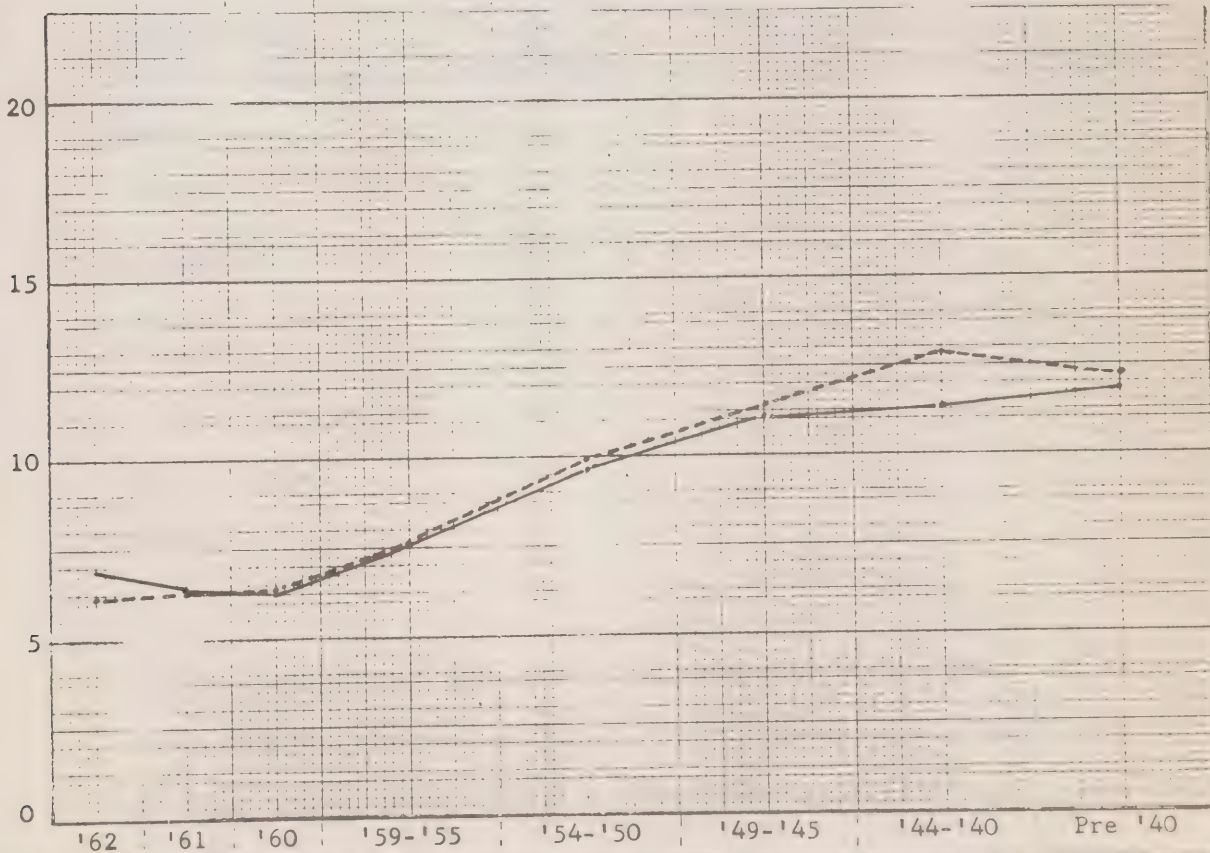
Upper Graph: Salary of graduates of French-language Universities
as a percent of average.

Lower Graph: Average salaries of graduates of French-language
Universities ----- and other Universities ———

Fr.as
a % of
average



Salaries
'000
\$



Number	Fr.	36	127	151	515	268	139	76	94
	Other	40	132	176	836	284	528	279	489
Salary	Fr.	6166	6232	6347	7700	9942	11366	12815	12212
	Other	6862	6287	6289	7665	9646	11074	11387	11865
Salary % of Av	Fr.	94.4	99.6	100.5	100.3	102.4	102.1	109.6	102.4
	Other	105.1	100.4	99.6	99.8	99.3	99.5	97.4	99.5

and for all others. Shown separately are the salaries of French-Canadians as a percentage of the average.

Engineers, of course, are not much more homogeneous than scientists, and a comparison of French-Canadian and other engineers, especially in the early years, is a comparison of groups of individuals with quite a different mix of training.

To illustrate this fact, the following table (Table 2.5.3.4.2) gives the professional mix of the 583 engineers in our

TABLE 2.5.3.4.2

<u>Engineering branch</u>	<u>Total # of graduates</u>	<u>No. of Graduates of French-language universities</u>
Chemical	68	3
Civil	163	69
Electrical	146	2
Mechanical and Industrial	122	1
Mining & Geological	43	0
Metallurgical	11	0
Other	<u>30</u>	<u>19</u>
	583	94

sample (both French and other) who graduated before 1940. It also shows the professional mix of the French-Canadian engineers. It is easy to see, even without a slide rule, that the output of the French-language universities was very different 25 years ago than that of the universities in general.

In order that one may make a more precise comparison of the fortunes of French-Canadian and other engineers in each

of the different branches of engineering, separate charts are shown for civil, chemical, electrical, mechanical and industrial, mining and geological, and metallurgical engineering. These charts (2.5.3.4.3 to 2.5.3.4.8) appear on the following pages. There is similar information for engineering physics and miscellaneous, but these are not shown in one case because the data are thin and in the other because the category is undefined.

In interpreting these graphs one must note that for the particular branches of engineering and for particular graduating classes, the number of French-Canadians in our sample and in the relevant universe, especially in the early years, is sometimes quite small, with the result that there is a good deal of random and meaningless variation from class to class. The fewness of cases for the early years coincides with the start-up of the different professional programmes in the French-language universities. Where the relative performance of the French-Canadians seems to rise in a consistent way from before 1940 to the present, as it does in chemical, electrical and metallurgical engineering, we can postulate that we are observing the development of both the quantity and quality of a new programme. The other branches of engineering in the French-language universities seem to have been strong from the very first.

The largest branch of engineering and the one which accounts for over 45 percent of the French-Canadian graduates is civil. This is perhaps the most important group to analyze, partly because French-Canadian civil engineers are by far the most numerous

CHART 2.5.3.4.3
PROFESSIONAL ACHIEVEMENT

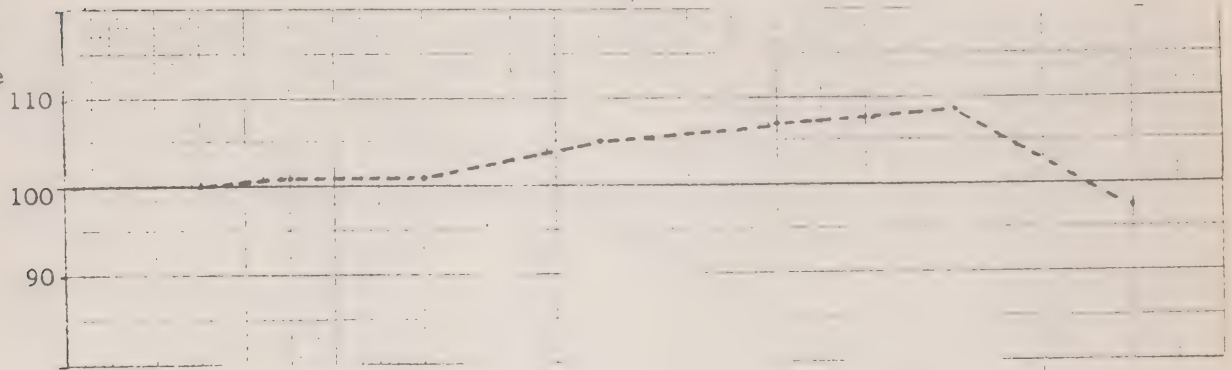
Survey Que. Combined

DISCIPLINE Civil Engineering LEVEL Bachelor

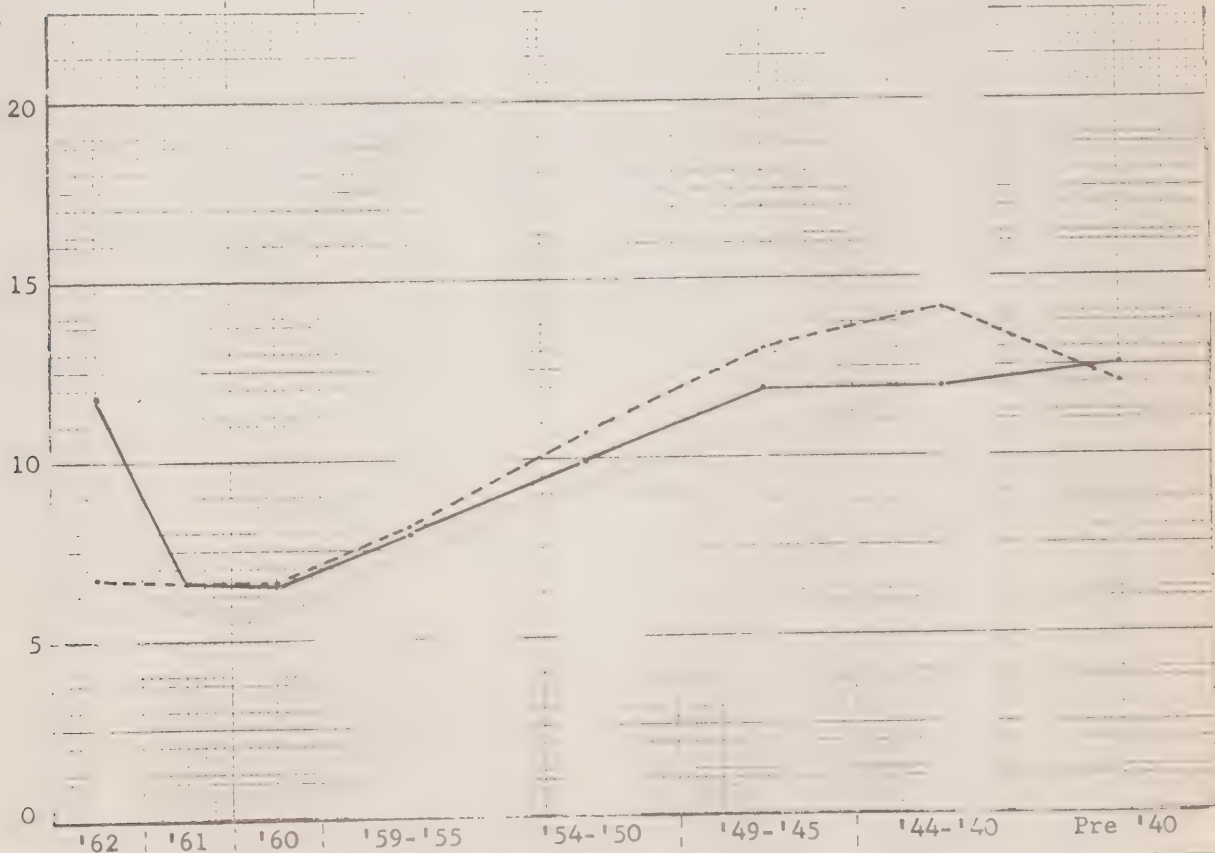
Upper Graph: Salary of graduates of French-language Universities as a percent of average.

Lower Graph: Average salaries of graduates of French-language Universities ----- and other Universities ———

Fr.as
a % of
average



Salaries
'000
\$



Number	Fr.	13	49	60	217	109	46	42	69
	Other	6	28	37	159	175	107	41	94
Salary	Fr.	6730	6561	6650	8142	10738	13054	14190	12014
	Other	11750	6571	6500	7965	9922	11845	11902	12574
Salary	Fr.	80.9	100.0	100.9	100.9	104.9	106.9	108.7	97.4
% of Av	Other	141.3	100.1	98.6	98.7	96.9	97.0	91.1	101.9

CHART 2.5.3.4.4
PROFESSIONAL ACHIEVEMENT

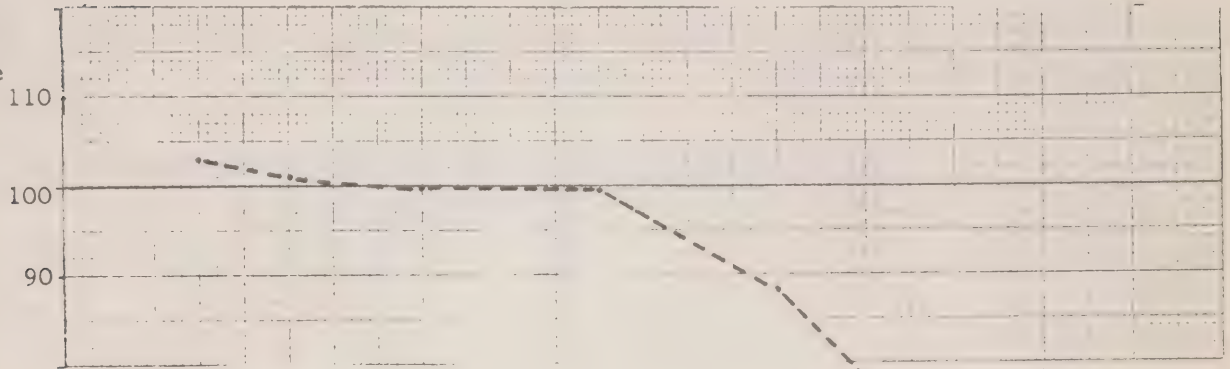
Survey Que. Combined

DISCIPLINE Chemical Engineering LEVEL Bachelor

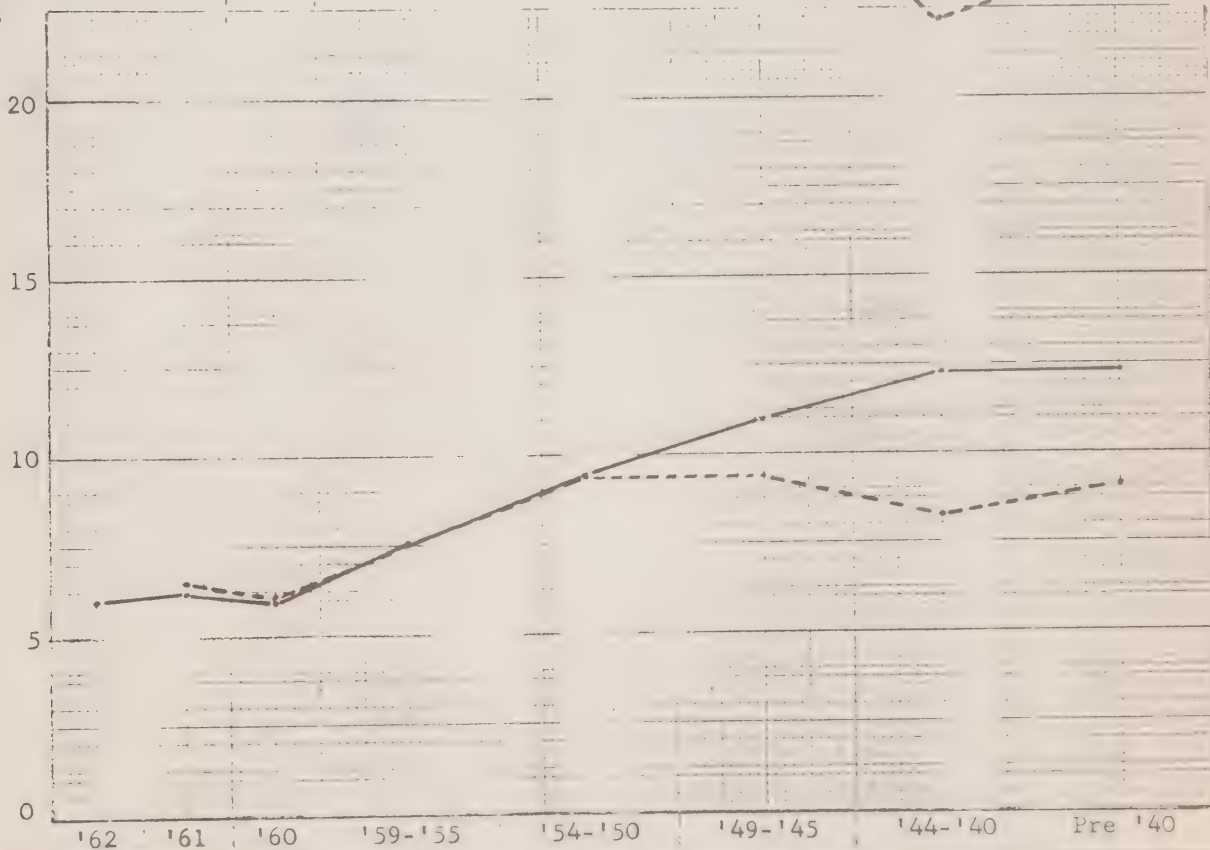
Upper Graph: Salary of graduates of French-language Universities as a percent of average.

Lower Graph: Average salaries of graduates of French-language Universities ----- and other Universities ————

Fr.as
a % of
average



Salaries
'000
\$



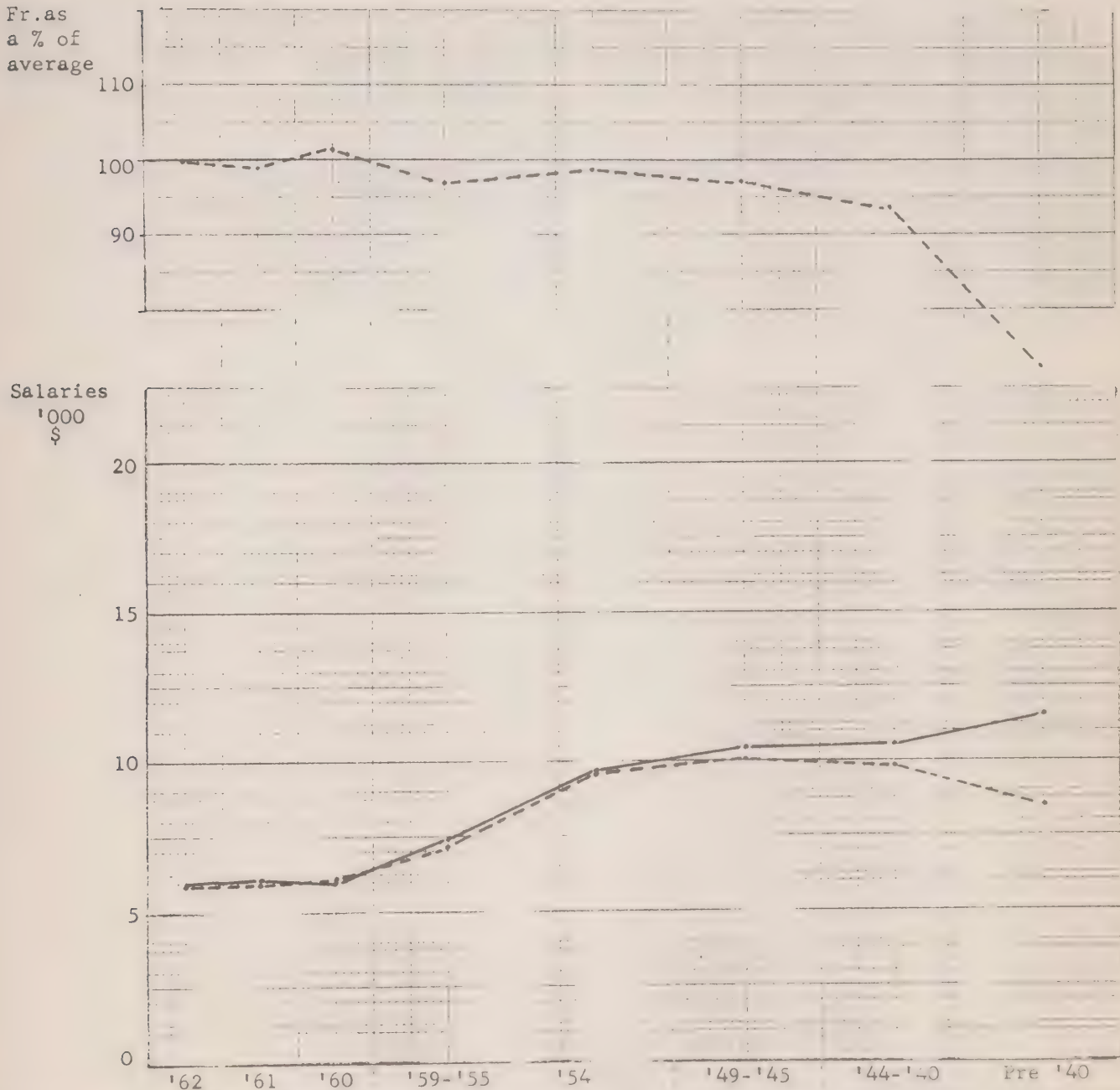
Number	Fr.	-	4	15	36	21	17	4	3
Other	Other	2	12	19	119	133	85	59	65
Salary	Fr.	-	6500	6100	7555	9404	9441	8250	9166
Other	Other	6000	6250	5973	7584	9462	10947	12262	12300
Salary	Fr.	-	103.0	101.2	99.7	99.5	88.3	68.7	75.4
% of Av	Other	-	99.0	99.1	100.1	100.1	102.4	102.1	101.1

PROFESSIONAL ACHIEVEMENT

DISCIPLINE Electrical Engineering LEVEL Bachelor

Upper Graph: Salary of graduates of French-language Universities as a percent of average.

Lower Graph: Average salaries of graduates of French-language Universities ----- and other Universities ————



Number	Fr.	12	40	25	53	45	28	6	2
Other	Other	11	45	51	218	203	123	53	144
Salary	Fr.	5916	5950	6140	7160	9600	10089	9833	8500
	Other	5954	6077	6009	7449	9736	10434	10375	11597
Salary	Fr.	99.7	98.9	101.5	96.9	98.9	97.3	93.7	73.6
% of Av	Other	100.3	101.	99.3	100.8	100.3	100.6	100.7	100.4

CHART 2.5.3.4.6
PROFESSIONAL ACHIEVEMENT

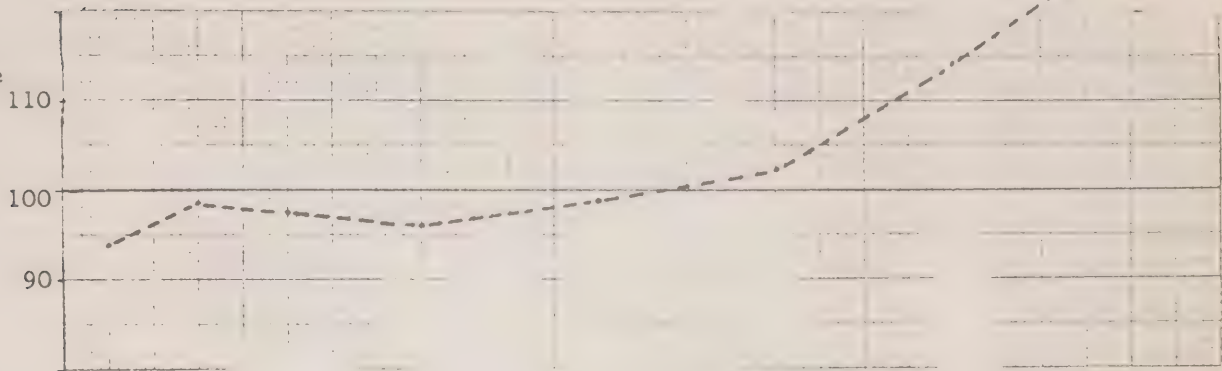
Survey Que. Combined

DISCIPLINE Mechanical & Industrial LEVEL Bachelor

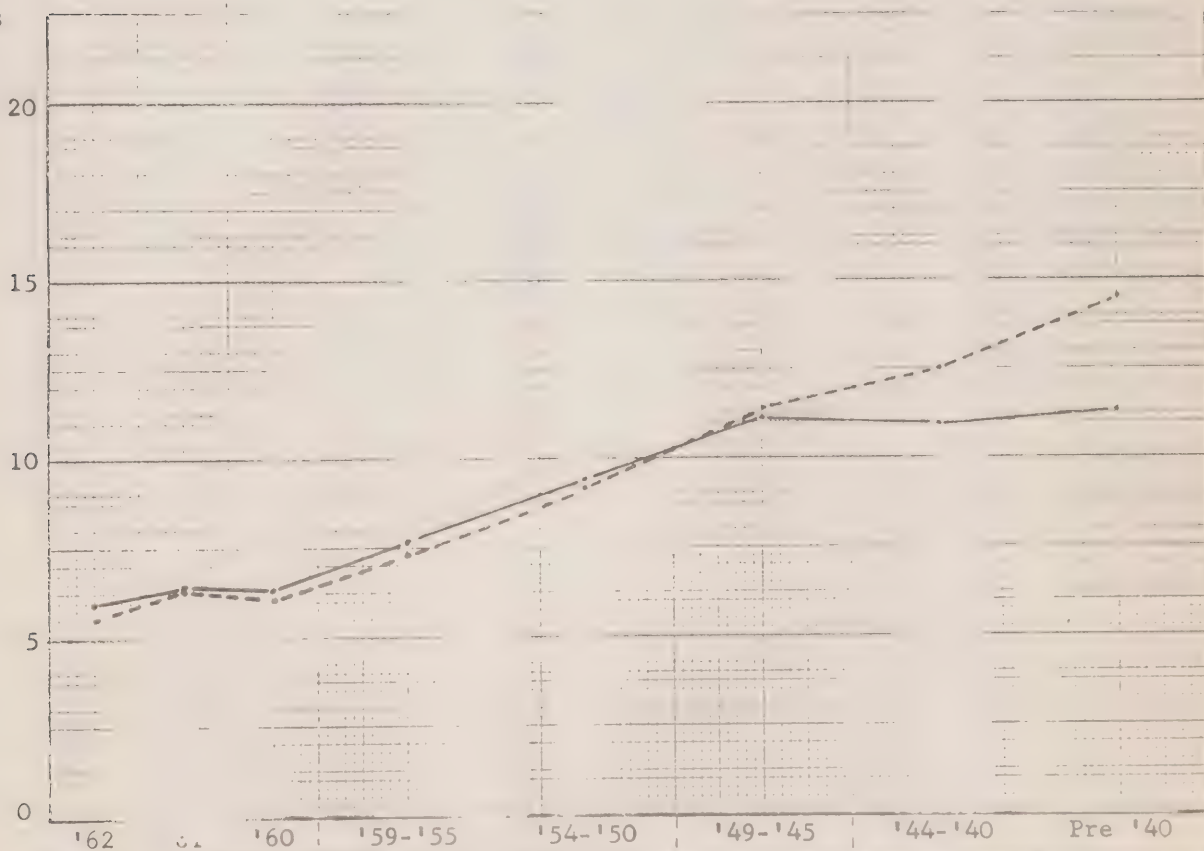
Upper Graph: Salary of graduates of French-language Universities
as a percent of average.

Lower Graph: Average salaries of graduates of French-language
Universities ----- and other Universities ———

Fr. as
a % of
average



Salaries
'000
\$



Number	Fr.	6	17	29	52	14	4	1	1
Other	19	30	49	259	289	156	80	121	
Salary	Fr.	5500	6264	6086	7288	9357	11375	12500	14500
Other	5973	6400	6357	7652	9467	11128	10925	11285	
Salary	Fr.	93.9	98.6	97.3	96.0	98.9	102.2	114.2	128.2
% of Av	Other	101.9	100.8	101.6	100.8	100.1	99.9	99.8	99.8

CHART 2.5.3.4.7
PROFESSIONAL ACHIEVEMENT

Survey Que. Combined

DISCIPLINE Mining & Geological LEVEL Bachelor

Upper Graph: Salary of graduates of French-language Universities
as a percent of average.

Lower Graph: Average salaries of graduates of French-language
Universities ----- and other Universities -----

Fr. as
a % of
average

110

100

90

Salaries
'000
\$

20

15

10

5

0

'62

'61

'60

'59-'55

'54-'50

'49-'45

'44-'40

Pre '40

Number	Fr.	3	6	4	31	26	6	8	9
Other	1	7	10	41	44	22	24	43	
Salary	Fr.	6500	5833	6250	7370	9000	10916	11750	-
Other		7500	6214	7500	7768	9704	10250	11958	11958
Salary	Fr.	96.3	96.6	87.5	97.0	95.3	105.0	98.7	-
% of Av	Other	111.1	102.9	105.0	102.3	102.6	98.6	100.6	-

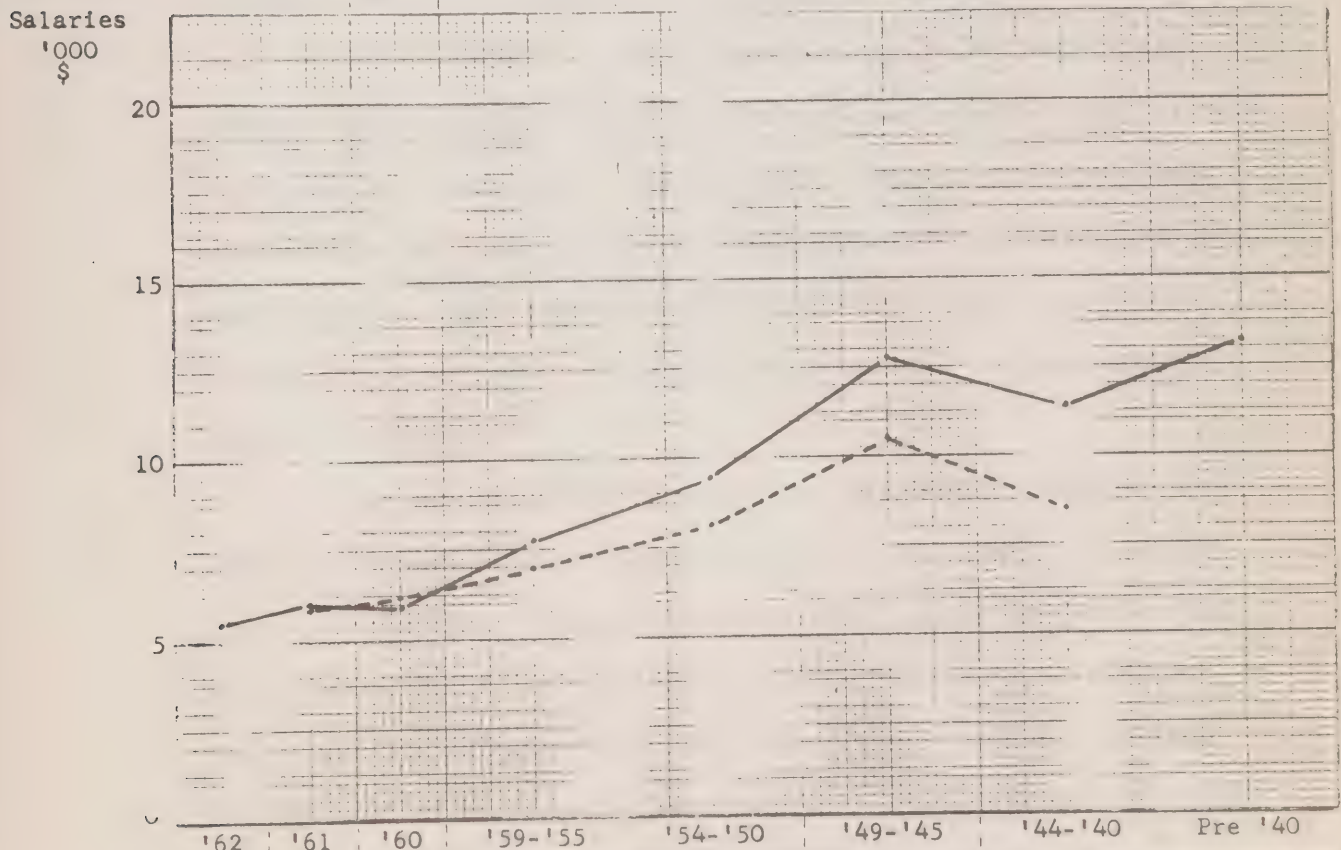
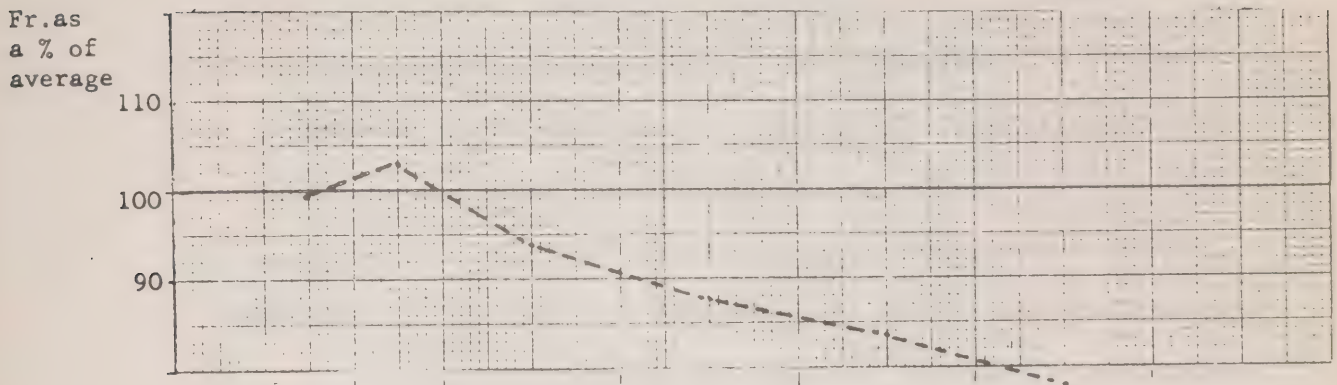
CHART 2.5.3.4.8
PROFESSIONAL ACHIEVEMENT

Survey Que. Combined

DISCIPLINE Metallurgical LEVEL Bachelor

Upper Graph: Salary of graduates of French-language Universities
as a percent of average.

Lower Graph: Average salaries of graduates of French-language
Universities ----- and other Universities ———



Number	Fr.	6	7	15	5	2	2	0
Other	2	6	21	26	19	16	11	
Salary	Fr.	5833	6214	6966	8100	10500	8500	-
Other	5500	6000	5833	7738	9461	12763	11312	13227
Salary	Fr	-	99.3	102.9	93.9	87.7	83.7	77.3
% of Av	Other	-	102.1	96.6	104.3	102.4	101.7	102.8

in our sample, but more important because the graduates of French-language and other schools are probably the most homogeneous from the point of view of professional qualifications. The chart pertaining to civil engineers (2.5.3.4.4) shows that the students of the French universities who have graduated since the beginning of the Second World War have a clear and significant advantage over graduates of all other universities. Those who graduated in the 1920's and 30's on the other hand are at a 2.6 percent disadvantage.

Two additional tests were made of the relative achievement of French-Canadian engineers who went on to higher degrees or who went to work in Ontario. Chart 2.5.3.4.9 on the following page compares the income of the 54 professional engineers at the Master's level who have taken their undergraduate training at French-language universities with 289 engineers at the same level who attended other universities. Again, the advantage clearly lies with the French-Canadian, but in a more pronounced way than was the case at the Bachelor's level.

It may be assumed that most of the Master's degrees were taken at English-language universities and that almost all of the 54 French-Canadians represented in our chart would have therefore a sufficient command of English to be able to earn a university degree in it. It is probably for this reason that their premium exceeds that of the French-Canadian with only a Bachelor's degree, many of whom will not have such a high degree of bilingualism.

Further evidence on the importance of language can be found in the experience of the French-Canadians with Bachelor of Engineering degrees who are working in Ontario. The branch of

CHART 2.5.3.4.9
PROFESSIONAL ACHIEVEMENT

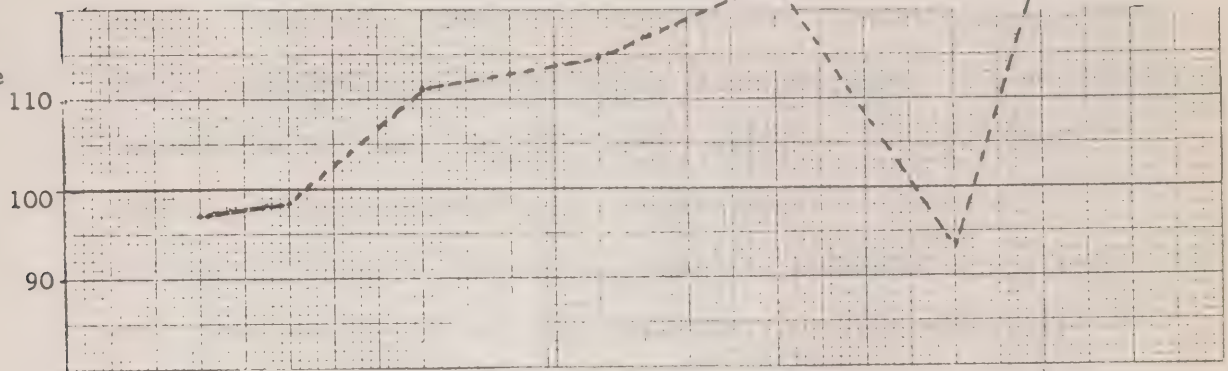
Survey Que. Combined

DISCIPLINE All Engineering LEVEL Master's

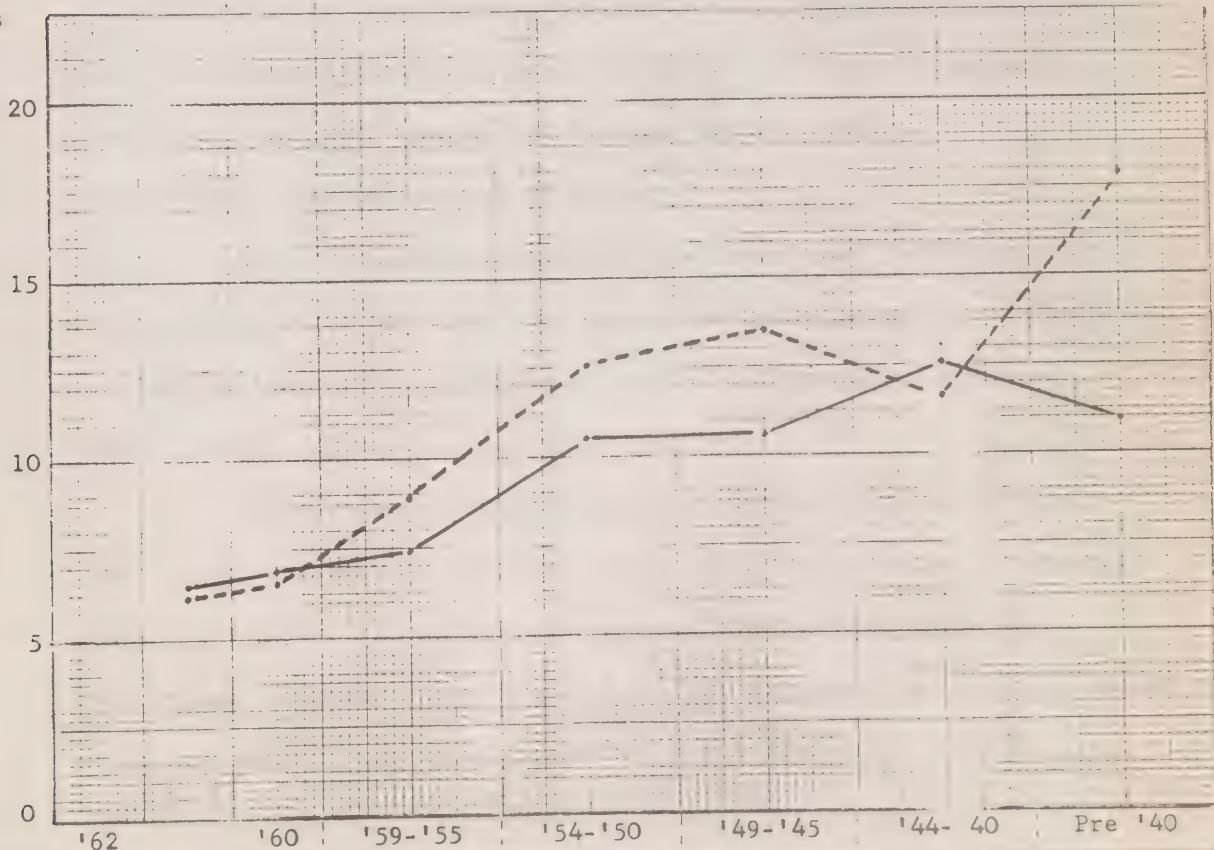
Upper Graph: Salary of graduates of French-language Universities as a percent of average.

Lower Graph: Average salaries of graduates of French-language Universities ----- and other Universities ———

Fr.as
a % of
average



Salaries
'000
\$



Number	Fr.	3	6	22	12	3	4	4
Other	Other	4	3	31	44	60	34	113
Salary	Fr.	6166	6500	8909	12541	13500	11625	17875
	Other	6500	6833	7370	10522	10641	12544	10933
Salary	Fr.	97.0	98.3	111.2	114.5	125.3	93.4	160.0
% of Av	Other	102.3	103.4	92.0	96.1	98.7	100.8	97.9

engineering, year of graduation and salary, and the number of graduates from French-language and other universities is shown in Table 2.5.3.4.10. Also shown is the income of the French-Canadian as a percentage of average.

Again the numbers in the individual discipline-graduation-class categories are too small to be very conclusive. But we were impressed by the fact that all recent graduates from the French-language universities working in Ontario were at an income disadvantage while on balance all those who graduated before 1960 were almost exactly at par with graduates from other provinces.

A possible explanation of this phenomenon is that the recent graduates from Laval, Sherbrooke and L'Ecole Polytechnique may have something of a language handicap. In fact a feeling of deficiency in their command of English may be exactly the reason why some of them have moved to Ontario.

We can probably assume on the other hand that those who are in Ontario in the older age groups are able to operate effectively in English, and such individuals, so far as income is concerned, seem to have achieved professional parity.

There are not enough engineers in professional work with Ph.D.'s or Master's in Ontario or with Ph.D.'s in Quebec to warrant separate tables. In Ontario and Quebec combined there are only 17 individual engineers from French-language universities in professional (non-management, non-educational) work who have gone on to Ph.D.'s. Of these, 5 were in Ontario at the time of the survey.

Having commented on the relationship between the level of education and mobility among scientists, we should point out that

TABLE 2.5.3.4.10

54 Engineering Graduates at the Bachelor Level
of French-Language Universities working in Ontario
compared with Graduates of other Universities in
the same Discipline-Graduation-year Category

Discipline	Graduation Year	French		Other		French as a percent of Average
		Number	Salary	Number	Salary	
Civil	62	3	5,833	30	6,200	94.6
	61	3	5,833	72	6,138	95.2
	55-59	2	8,500	397	7,484	113.5
	50-54	3	7,833	472	9,694	80.9
	40-44	1	12,500	57	11,394	109.5
	pre 40	5	13,100	222	11,522	113.4
Chemical	62	1	5,500	25	5,740	96.0
	61	1	5,500	44	6,250	88.2
	55-59	2	7,500	294	7,350	102.0
Metallurgical	60	1	5,500	14	6,785	82.1
	55-59	1	6,500	32	7,375	88.5
	50-54	3	9,833	69	9,326	105.2
	45-49	2	11,000	49	10,204	107.5
Mining & Geological	55-59	3	6,166	59	7,211	86.1
	50-54	3	9,166	84	9,196	99.7
Engineering Physics	55-59	1	6,500	58	7,396	88.1
Mechanical & Industrial	62	4	5,500	36	6,083	91.3
	61	1	5,500	69	6,195	88.9
	55-59	1	8,500	540	7,588	112.0
	50-54	1	10,500	688	9,252	113.5
Electrical	55-59	5	7,500	336	7,446	100.7
	50-54	3	8,500	546	9,091	93.5
	45-49	<u>4</u>	9,000	401	10,068	89.5
Total		54				

the same generalization seems to hold for engineers. 3.7% of engineering graduates with Bachelor's degrees from the French-language universities in our sample were working in Ontario. The corresponding percentages for Master's and Ph.D.'s were 7 percent and 34 percent respectively.

2.5.3.5 Ethnicity and Professional Achievement

The conclusion which we reach from the foregoing analysis is that when one begins with overall income achievements, one finds that the average French-Canadian (more properly the average resident of Quebec) does not have an income as high as the average resident of Ontario. The main explanation we suggest is the different level of education in the two provinces. If this is true, however, we should find that when we can identify groups of French and other Canadians, who are really homogeneous with respect to education, their income performance should be very similar. This we think has been demonstrated by the foregoing analysis of professional architects, scientists and engineers. Generally speaking, the closer we approached the ideal of comparing exactly homogeneous groups, the smaller was the income spread between the two groups.

It would of course be absurd to pretend that education is the only variable explaining income differences, and having underlined the overriding importance of education, we should like to go on to suggest that ethnicity and perhaps language may also be factors in determining achievement of ethnic or language groups.

English-speaking managers might very understandably prefer to promote English-speaking, English-thinking candidates with whom

they find communication easiest. On the other hand a promotion must also take into account the social equilibrium and the overall motivation and productivity of the total work force. While the head design engineer, for example, might like to have a like-thinking assistant, if his work force is made up of people from other ethnic groups, he might find it desirable to give the job to the best available candidate with an ethnic background different from his own. Recognition of the facts of ethnicity or tribalism is not necessarily therefore in opposition to a mechanistic profit-maximizing view of business. The loss of productivity incurred by the promotion of a man whose command of English is less than what might be desired may be made up by an increase in productivity elsewhere. From this it is clear that social pressure and feelings of tribalism or ethnicity could influence promotions and salaries, and it would follow that the more intense the feelings of nationalism or tribalism, the more this factor would have to be taken into account in determining promotion.

While there is so far as we know no documentation to support this view, it is the impression of one of the authors of this report who worked on a study of corporate practices and policies of U.S. subsidiaries in Canada a few years back, that the "tribal" noises which some Canadians were making caused some U.S. firms to seek Canadian replacements for U.S. managers. In some cases it was felt by the author and by the American companies that they had to promote the second-best people available who suddenly for social reasons became the best people to fill the jobs. Regretfully making

these second-best appointments could not be looked on as moves to improve the productivity of the Canadian firm, but were rather holding actions to solve a social problem which might conceivably cause a deterioration of Canadian productivity.

The problem faced by the American firm is very similar to that of the English-Canadian firm. Vis-à-vis the United States, the proportion of the Canadian population with higher degrees - especially in business subjects - is very much smaller. The ratio of current output of M.B.A.'s, for example, is about 1 to 7 per thousand of population. The U.S. firm that feels it must replace an American with a Canadian is almost certainly on average going to have to settle for an individual with less education and certainly less business education. The same situation holds of course for the firm controlled by English-Canadians who feel they must replace an English-Canadian with a French-Canadian.

If we are right in thinking that at least some shift occurred from U.S. to Canadian personnel in the higher paid jobs, would it not be logical to expect some such shift in favour of French-Canadians in Quebec?

Because we had data collected over a period of three rather sensitive years in which relationships between French and English-Canadians were being publicly examined, it was possible to determine statistically whether any shift in the position of the French-Canadian did in fact occur.

In undertaking to analyze the shift in the income of the French-Canadians relative to all others over a fairly short period of time, we were confronted with a new problem concerning the size of our sample. In all of the previous analysis in this chapter the

emphasis was on the relative income of French and other Canadians at a point of time¹, not with change over a period of time. In order to be able to make fair comparisons of professional achievement, we wanted to isolate groups of professionals who were as nearly homogeneous as possible, and this led us to break our data into categories or cells by discipline, year of graduation and function performed. However, the more detailed our breakdown, the smaller the number of individuals in each cell so that in order to keep the number of cases or individuals in each cell up to a statistically respectable number, we combined the '62, '63 and '64 surveys.

Given our desire in the present case to separate out and to compare '62 and '64 data, it seemed desirable to combine our data in some other way. Our solution was to sacrifice the functional breakdown and for the present purpose to combine the professional, managerial and educational categories on the assumption that over the space of two years the relative importance of these groups would not change significantly.

Of course if the distribution of French and Other engineers among the professional, managerial and educational categories is different (which it is), then our combined French and Other groups are less homogeneous and a comparison of their absolute wages less significant. However, we are not here concerned with comparing like with like but only with measuring the sensitivity of corporate policies to the pressure of social and public opinion.

¹ Albeit a rather wide point!

Chart 2.5.3.5.1 on the following page shows absolute and relative income positions of French-Canadian engineers doing professional, educational and managerial work at the time of the 1962, and again at the time of the 1964, surveys. Naturally the salaries in 1964 are higher than those reported in 1962 but it also appears that the French-Canadian engineer has increased his salary slightly more than other engineers in the province.

Although there is some random variation in the survey results, the charts do indicate some improvement in the relative position of the French-Canadian over the period studied. The weighted average disadvantage of all engineering graduates from French-language universities reporting in the 1962 survey was 2.36 percent while the 1964 survey indicated that the gap had narrowed to 1.36 percent. Within a two-year period the French-Canadian graduate had improved his salary position by one percent in relation to the average.

The improvement, however, was not uniform over all age classes. It was the French-Canadian graduates of the 1940's and 1950's who received almost all the benefit: the older graduates seem to have benefitted not at all.

A much more dramatic (though statistically a much less significant) improvement is to be found in Chart 2.5.3.5.2 which shows the change in the relative position of the graduates of French-language universities from the 1962 to the 1964 survey who went on to earn a Master's degree. The 60 Master's level engineers in the 1964 survey have an income advantage of over 9 percent, while

CHART 2.5.3.5.1
PROFESSIONAL ACHIEVEMENT

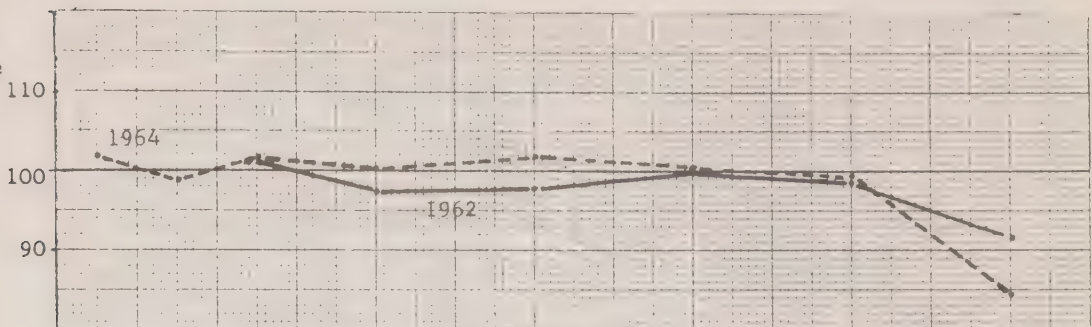
Survey '64, '62

DISCIPLINE Engineering-All Branches LEVEL Bachelor

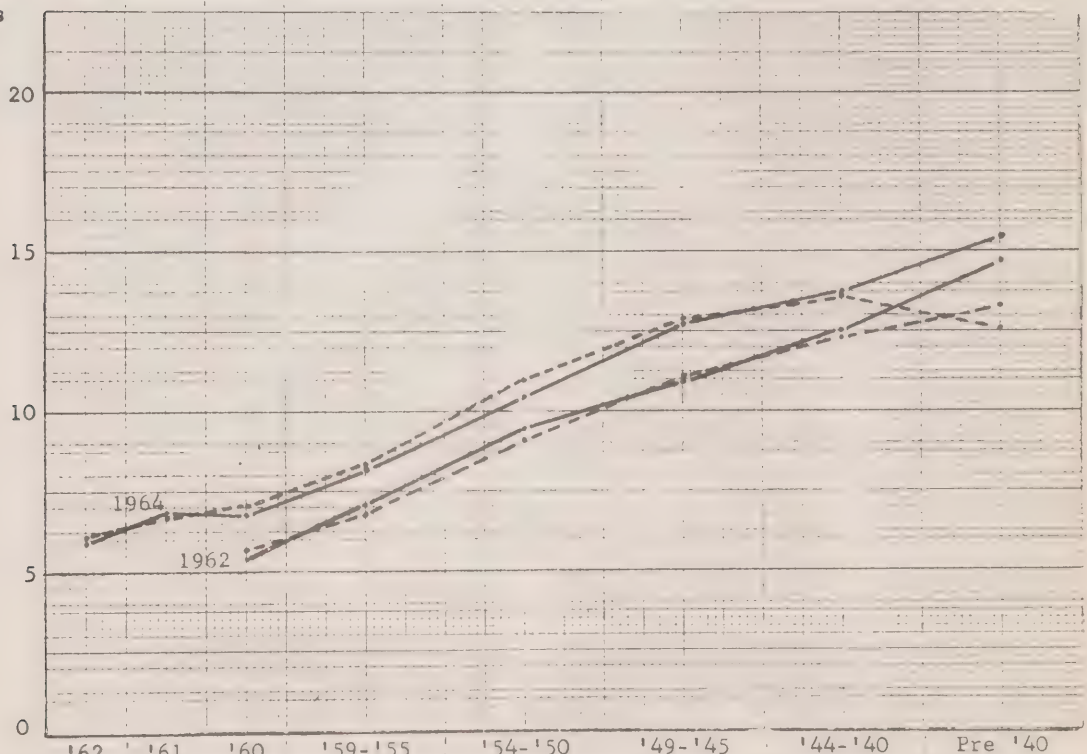
Upper Graph: Salary of graduates of French-language Universities
as a percent of average.

Lower Graph: Average salaries of graduates of French-language
Universities ----- and other Universities ———

Fr.as
a % of
average



Salaries
'000
\$



1964 Survey

		'62	'61	'60	'59-'55	'54-'50	'49-'45	'44-'40	Pre '40
Number	Fr.	80	75	57	201	125	86	49	75
	Other	82	55	53	267	384	286	156	323
Salary	Fr.	6137	6620	7008	8490	11060	12918	13612	12640
	Other	5915	6809	6745	8468	10863	12842	13673	15503
Salary	Fr.	101.9	98.8	101.9	100.2	101.4	100.5	99.7	84.5
% of Av	Other	98.2	101.6	98.0	99.9	99.6	99.9	100.1	103.6

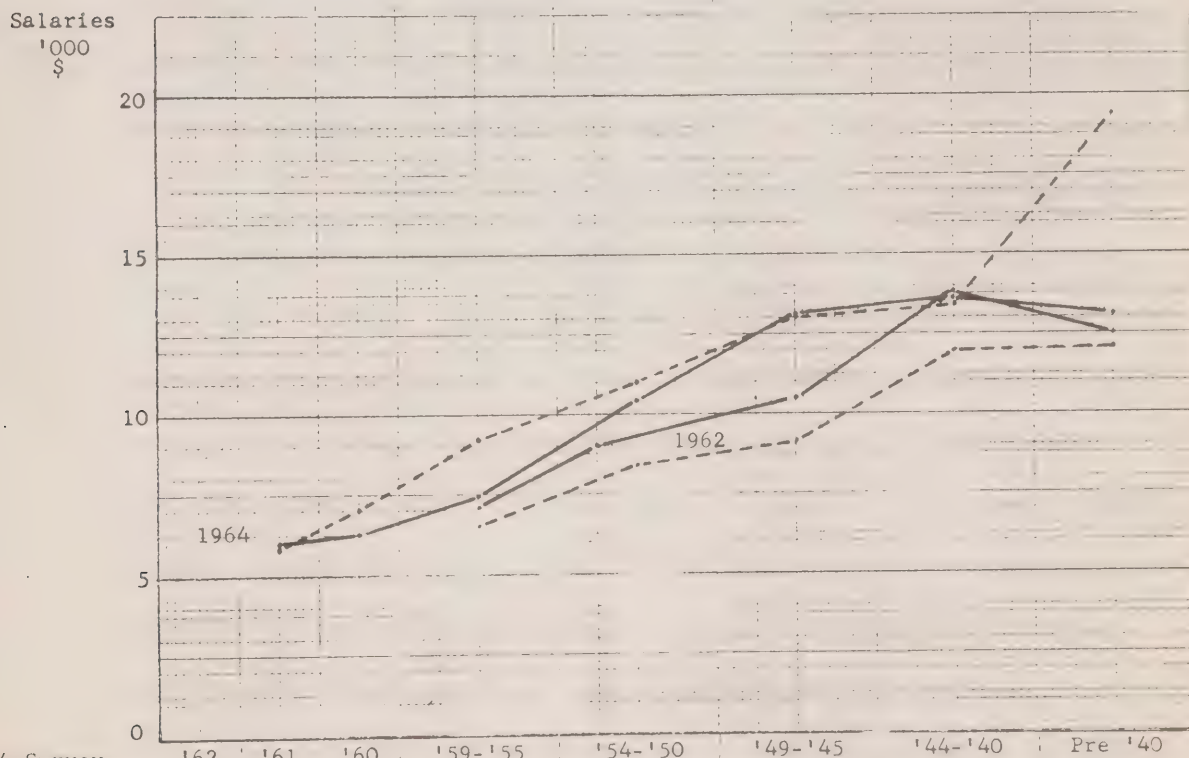
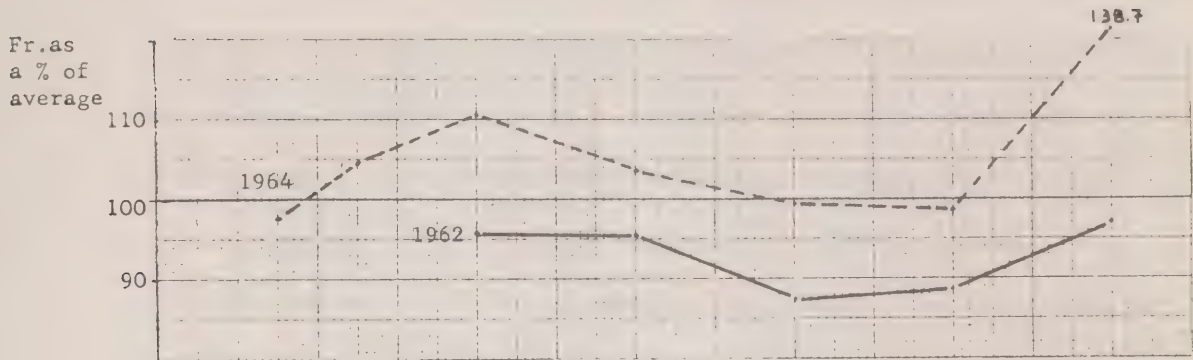
1962 Survey

			'44	189	132	80	49	85
Number	Fr.		74	306	419	296	165	393
	Other							
Salary	Fr.		5613	6785	9143	11050	12377	13311
	Other		5486	7044	9406	11035	12506	14736
Salary	Fr.		101.5	97.7	97.9	100.1	99.2	91.9
% of Av	Other		99.2	101.4	100.7	100.0	100.2	101.8

DISCIPLINE Engineering-All Branches LEVEL Master's

Upper Graph: Salary of graduates of French-language Universities as a percent of average.

Lower Graph: Average salaries of graduates of French-language Universities ----- and other Universities ————



1964 Survey

Number	Fr. Other	1	5	6	15	16	2	6	9
		-	4	4	14	22	24	21	59
Salary	Fr. Other	7500	5700	7000	9233	11031	13000	13416	19388
		-	6000	6250	7428	10409	13083	13666	13152
Salary % of Av	Fr. Other	-	97.7	104.5	110.4	103.4	99.4	98.6	138.7
		-	102.9	93.3	88.8	97.5	100.1	100.4	94.1

1962 Survey

Number	Fr. Other		1	14	13	3	3	5
			-	14	28	52	18	63
Salary	Fr. Other		4500	6571	8423	9166	12000	12100
			-	7142	9035	10557	13777	12507
Salary % of Av	Fr. Other		-	95.8	95.3	87.5	88.7	97.0
			-	104.2	102.2	100.7	101.9	100.2

the 38 graduates included in the survey two years earlier reported an income disadvantage of over 5 percent.

It seems possible to us to suggest a reasonable hypothesis to account for these observations. Business is primarily concerned with making a profit, and the businessman qua businessman will probably think very little about ethnicity, religious differences and so on since normally these matters have little to do with the efficient operation of his business. In general then if education explains productivity, people who have similar educational backgrounds and similar abilities and therefore similar productivity potential will normally be treated in about the same way - and this we think is demonstrated by the data.

But ethnicity may become important in the operation and even in the survival of a business. If productivity, motivation, sales and costs are likely to be influenced by the perceived ethnic policies and practices of a firm, the rational businessman will give ethnicity the same careful consideration he would normally give to any other factor likely to influence his costs. Businessmen seem to have enough leeway, at least in the short run, to accommodate to ethnicity and to hire and promote individuals using ethnicity as one of the relevant factors. The awareness of the importance of ethnic origin, however, will not alter the fortunes of all French-Canadians in the same way - at least it does not seem to have done so thus far; and we suggest that the key to understanding which individuals benefit and which do not is probably not ethnicity but rather language.

Our survey results make it perfectly clear that as one rises in the hierarchy of a Quebec company, the relative importance of French and English shifts in favour of English - and this is every bit as true for a company owned and operated by French-Canadians as one owned by, say, Americans.

It is apparently not difficult for a unilingual French-Canadian engineer to enter most firms in Quebec and to work and progress for many years in the company without being called upon to work effectively in the English language. In fact in his first jobs where many of his subordinates and colleagues will be unilingual French, an effective command of French will be vital whereas an understanding of English may be much less important. However, as he rises to the point where non-company, non-provincial and non-French-Canadian contacts become more frequent in his work, the importance of English will increase and sometimes this may happen abruptly as he moves from one professional or managerial level to the next, affording little time for adjustment. It is easy to imagine that this language filter works to the disadvantage of the older French-Canadian who took his university education in French and perhaps continued to use French almost exclusively at his work and in his home. After a normal career up to, say, the age of 50 in which he may have been as successful as his English-speaking colleague, he may find himself suddenly confronted with the necessity to communicate effectively with customers or suppliers outside the province. Any disadvantage which he has in this regard will obviously seriously affect his productivity and his further

progress in the company.

Faced with the desirability of hiring and promoting more French-Canadians, the rational firm looking for engineers will be interested in hiring more young French-Canadians. These young professionals can be employed in the French language environment where they will be fully effective; more important, they are young enough to learn English and perhaps work for a time in company locations outside Quebec as part of their training careers. It is therefore easy to understand why the demand for young, well-trained French-Canadians should rise to the point where they command a premium on the market. On the other hand the older French-Canadian engineers with Bachelor's degrees have not experienced any increased demand for their services; indeed, if anything, their relative position has declined. The position of the average French-Canadian engineer who graduated before 1940 is in sharp contrast to the position of the engineer in the same age category who went on to a Master's degree. Undoubtedly he received an education which was comparable to the engineer of other ethnic groups since he went to the same universities, but what may be of greater importance is that the instruction for the most part was in English. French-Canadians who some time ago made the adjustment to English by taking a higher university degree did not by so doing lose their ability to use French; instead they gave proof of being able to work, argue, persuade and command (as well as learn) in English.

Such people would be at no disadvantage in an English environment and, indeed, so long as they remained in Quebec, their

earlier French training and language skill would be a factor working heavily in their favour. If they did meet prejudice, as undoubtedly they did from time to time, it did not outweigh the commercial advantage to their employers of their knowledge of French.

The result of this increased demand for the limited number of older French-Canadian engineers with Master's degrees who presumably know English is that these people apparently command a premium on the market in the same way, and presumably for the same reason, as do the young French-Canadian engineers just coming out of college.

In summary we see that the French-Canadian engineer acting as a professional (i.e. in a capacity outside management or education) has something of an income advantage. His relative advantage is not so marked as that of the architect, but it is appreciably greater than that of the scientist.

We have been told that this "pecking order" fits with the temporal and qualitative development of the different areas in the French-language universities. That is to say we have been told that architecture ranked with law and medicine as an honoured profession in French Canada and was one of the first developed in the French-language universities. Engineering was probably the next profession to develop quantitatively and qualitatively, especially in L'Ecole Polytechnique which had a fair measure of autonomy and was therefore in a position to escape from the "pattern of classical education".

Science, on the other hand, had to fight its way out of the pattern of classical education (as it did elsewhere in the world).

At first science options crept into the cours classique until finally a sequence of courses became identified as a "cours scientifique". Until fairly recently, however, such science courses were relatively few and served to identify a variant of a programme which was still basically general, and was classically oriented.

Certainly the attitudes and the historical developments described above seem to fit neatly into the statistical findings concerning the relative achievement of architects, engineers and scientists from French-language universities.

2.5.4 MANAGERIAL ACHIEVEMENT

The previous chapter examined the economic achievement of certain groups of professionals. It was found that income was closely associated with education and age and that professional people of the same age and with the same education tended to earn about the same salary. It is very much more important to be a university graduate than it is to be an English-Canadian. The French-Canadian professional engineer earns a great deal more than the English-Canadian high school graduate, indeed on average he earns about the same as the English-Canadian engineer with similar training. If he was at a slight disadvantage a few years ago because of ethnic prejudice, the quality of his education, or a language disadvantage, he seems to be at a slight advantage now. Where there are persistent differences in income (e.g. the failure of the pre-1940 French-Canadian graduate at the Bachelor's level to improve his relative position), the explanations seem to be associated with language skills or the quality of education rather than with ethnicity, per se. The pre-1940 engineer with a Master's degree (who is almost certainly bilingual) has improved his position considerably. The economic disadvantage of the French-Canadian scientist seems to be a function of the kind of science course he has taken. The French-Canadian architect seems to be at a clear advantage over others practising their profession in Quebec.

From this it may be concluded that ethnicity or rather lack of fluency in English may at one time have been something of

a disadvantage to the French-Canadian, but that now ethnicity per se has become a factor in the corporate practices and policies of firms operating in Quebec and that it works to the advantage of the French-Canadian - at least to the advantage of the French-Canadian who is young or who has a good knowledge of English. This seems to confirm an observation made by the staff of the Graduate School of Business at McGill University that, other things equal, a bilingual French-Canadian is paid a premium for his ethnic origin on today's market. It may be argued, therefore, that since income levels for French, and other, Canadians with equivalent education are approximately the same and seem, moreover, to be moving in a direction which favours French-Canadians, dissatisfaction with the state of the economic status of the French-Canadian should disappear.

2.5.4.1 Social Significance of Managerial Achievement

To assume simply that equal incomes would mean equal levels of satisfaction, however, would be to take a very out-of-fashion view of human nature. Man is not simply an economic being. He has a hierarchy of wants and needs. A hungry man may struggle single-mindedly for food, but once he has satisfied his hunger, he does not stop struggling. After a man has obtained his basic economic wants, he continues to strive, but for "higher" social goals such as status, recognition, and self development. Many of these higher wants or needs are associated with management positions, and this makes entry into the management stream especially desirable. Any person who feels himself to be unfairly excluded from becoming a

manager or from climbing the managerial ladder to the top is likely to be a frustrated and unhappy person.

Since in fact there is not always room at the top, there are inevitably many people who learn to live with some of their social wants unfulfilled. This may pose personal problems for these individuals, but such personal problems do not add up to a political problem unless those excluded from management positions can in some way be differentiated from those who are not, and unless this difference can be used as the basis for organizing a political protest movement.

To put the matter a little differently, there are jobs in any society which may make their occupants more or less unpopular; money-lending, land owning, and management are examples which come to mind. In particular, it is not too difficult to see why managers should be somewhat unpopular: they are more affluent than the managed, and the exercise of their power reduces the power and freedom of those being managed. Given people as they are, it is easy to see why the managers are vulnerable to criticism, jealousy and protest. However, provided the managed and the managers are relatively homogeneous - provided they are recognized as belonging to the same tribe - it may be difficult to organize an effective political protest against the managers. This is partly because they are, after all, tribe members and partly because most of the malcontents who are likely to be effective in leading a political protest are also candidates for entry into the ranks of the management class.

But let the managed and the managers be of two different tribes, or colours, or nations, or language groups, and, further, let these tribal differences be perceived, rightly or wrongly, as a barrier which cannot be crossed, and the individual personal frustrations of those who do not enter the management class may quickly add up to a political problem.

Many of the most unpleasant aspects of the ideologies of colonialism, racism, anti-colonialism, and nationalism can be fostered by actual or supposed lack of homogeneity between the managers and the managed.

Of course the managers in any society are not just business managers. Managers there are in governments, churches, schools, cultural and social groups, cities, courts, and families. In a North American context at least, these managers seem to be drawn more or less pro rata from the different ethnic groups. The focus of this study, however, must be on business and on business managers. Referring still to the North American context, we should recognize that business managers are not quite the same as the managers in some other aspects of our social life: not only are they themselves managed or regulated by the courts, the shareholders, the laws and the civil servants, but they are also closely regulated by each other and by their customers. Indeed it could be argued that of all the various types of managers that exist in society, business managers are the least important and the least powerful.

Still, if the French-Canadians feel that English-Canadians have an unfair advantage in obtaining management positions in

business, they are very likely to experience frustration. And the English-Canadian who has any trouble understanding this feeling might reflect on the speeches which are made from time to time about American companies, who, it is alleged, are not hiring Canadians for the top jobs!

2.5.4.2 Managerial Achievement Ratios

Our problem then is to determine what kind of representation the French-Canadian has in management, to understand and explain the facts, and to consider what role, if any, education and language may play in determining who is to manage, and who is to be managed.

There are several ways of defining "manager". In the census returns the Dominion Bureau of Statistics has a vocational classification called "managerial", and the people in this category are those who have selected that particular term over all others as best describing their function. On the other hand it can be argued that almost anyone who has an income of \$10,000 or more performs at least some management functions. Many of the professionals who were the subject of the last chapter undoubtedly performed some managerial functions.

The following table gives the percentage of the working population in Quebec by ethnic origin and the proportion that each ethnic group contributes to the class called managers. Management is defined in two senses: the first is the Dominion Bureau of Statistics' managerial category, and the second includes all those except craftsmen and salesmen in the professional class earning more than \$10,000 per year.

TABLE 2.5.4.2.1

Managerial Achievement Ratios in Quebec
for those earning \$10,000 and over per year

Origin	Working Population by Origin	Managers (D.B.S. Classification)	Professionals except craftsmen & salesmen		
	%	%	Achiev. Ratio	%	Achievement Ratio
French	75.4	44.3	.59	48.7	.65
British Isles	12.8	33.0	2.58	32.1	2.51
Other	11.8	22.7	1.92	19.2	1.63

In each case an "achievement ratio" has been calculated, which is simply the proportion of each ethnic group in a particular managerial category (e.g. the proportion of French-Canadians in the managerial group earning \$10,000 per year and over) divided by the proportion of that ethnic group in the total population. The achievement ratio is therefore a measure of under- or over-representation in management of an ethnic group and provides us, in a sense, with a measure of the relative odds that an average member of an ethnic group has of achieving management status.

The table seems to indicate that the odds for obtaining management positions are weighted heavily against the French-Canadians. There are fewer than two-thirds as many French-Canadians in management as one would expect if the selection were made from the total population on a random basis. In Section 2.5.2 we examined on an a priori basis the possibility of the existence of widespread ethnic prejudice which might explain the below-average economic achievement of the French-Canadians. We considered that such an hypothesis would not stand up

under scrutiny when applied to the total population, but it is not so easy to dismiss this hypothesis when it is applied to the selection of managers. A company president who might insist that a person wear the old school tie before he is issued a key to the executive washroom may be less concerned about who uses the facilities in the plant.

If prejudice is an important factor in selecting managers, one might reason that it would likely be most keenly felt by those French-Canadians living outside the French-Canadian environment of their own province. For French-Canadians outside Quebec, therefore, one would expect achievement ratios to be lower. In spite of the fact that the level of education of French-Canadians outside Quebec is just a bit lower than for those inside the Province, we decided that the test was worth making, and so we repeated the calculations of the previous table except that this time the analysis was applied to all of Canada except Quebec. The results are shown in the following table.

TABLE 2.5.4.2.2

Managerial Achievement Ratios in
Canada excluding Quebec for those
earning \$10,000 per year and over

Origin	Working Population by Origin	Managers (D.B.S. Classification)	Professionals except craftsmen & salesmen		
	%	%	Achiev. Ratio	%	Achievement Ratio
French	5.1	3.8	.74	3.9	.76
British Isles	69.6	68.8	.99	66.9	.96
Other	25.3	27.4	1.08	29.2	1.15

We were frankly surprised to find that instead of having lower management achievement ratios, the French-Canadians outside

Quebec clearly score higher despite slightly less formal education. It should be remembered that the French-Canadians analyzed in this table still identify themselves as being French-Canadians. We have to assume, of course, that a very high proportion of them speak English, but in their own view at least they are not Anglicized. The improvement in the achievement ratio of French-Canadians outside Quebec (who presumably speak English) gives at least a hint about the importance of the English language in the management of business.

Incidentally, while the table suggests the importance of knowing English, it also makes it quite clear that the "advantage" of actually being English is grossly overrated. If there is any choice in the matter, the French-Canadians wanting to get ahead would significantly improve their probability of achieving management positions outside Quebec if they became "other-cized" rather than "Anglicized". The English in fact seem to have rather a hard time holding their own against "foreign" competition, and perhaps some of us would best serve the interests of our children by changing our designations to names like Smithousky or Armstrongovitch.

The problem with the achievement ratios that have been calculated in the previous tables is that they imply that managers should be selected from the population on a random basis regardless of age or education. Yet managers are not selected in this way. It is perfectly obvious that, Horatio Alger stories notwithstanding, the college graduate has a very much better chance of becoming a company president than has the high school drop-out.

There are a number of studies in the United States showing educational and other characteristics of the management elite. The

publications of Joslyn and Taussig¹ and Mabel Newcomer² are examples. From these pieces of research we know that the average educational level of executives is very high compared with the rest of the population, and is, moreover, increasing steadily over time. Indeed at the present time for the largest firms there are more executives with two degrees than there are without any, so that the average number of university degrees per senior executive in the United States now exceeds one.

In Canada we have put much less effort into education in general than has the United States, and only a fraction as much into business education. As a result firms have simply not had the number and variety of better educated people to choose from that similar firms in the United States have had. Still, the average level of education of managers in Canada is very much higher than that of the total population.

Information on the education of executives was obtained for this study from a supplementary questionnaire sent to all of the large companies in our main sample as well as from a mailed questionnaire sent to smaller firms in Ontario and Quebec. From the replies received we were able to obtain information on the education of about 1,700 executives. Of these, almost 1,400 were the top three executives in companies employing from 50 to 1,000 employees. The remaining 300 were the top executives of the large companies. In the latter case we asked for information on the top 10 people in the company, though we did not always receive information on just that number.

¹Joslyn, C.S. & Taussig, F. W. American Business Leaders; a Study in Social Origins and Social Stratification. The Macmillan Company, New York, 1932.

²Newcomer, M. The Big Business Executive; the Factors that Made Him, 1900-1950. Columbia University Press, New York, 1955.

The table on the following page describes the distribution of the 1,700 executives by size of firm and by highest level of education attained.

The results shown in Table 2.5.4.2.3 must be considered in relation to the educational achievement of the labour force in the age group from 45 to 65. For Quebec the distribution of education in this age group at the time of the 1961 Census was as follows:-

Primary and less than Primary	62
Less than High School	27
Completed High School	6
University: Less than Bachelor	2
University: Bachelor's degree or higher	3

By comparing the educational distribution of the top executives with the educational distribution of the total population, one can readily see that the small majority of the population that goes to university supplies a very large proportion of the executive talent. To be more specific: in the largest companies none of the top 322 executives in our sample had only primary, or less than primary, education. Yet if executives were chosen from the population on a random basis, we would have found 62 percent of them in this category. When we combine this educational category with high school dropouts, we can see that 89 percent of the population supplies only 1.2 percent of the top jobs in the large companies. Or, to put the matter the other way around, from the ranks of the 5 percent of the Quebec population between 45 and 65 with some university education come 85% of the

TABLE 2.5.4.2.3

Educational Distribution Of 1,692 Executives Occupying The
Top Positions By Highest Level Of Education Attained And
By Size Of Firm

Highest Level Of Education Attained	-----Size Of Firm By Number Of Employees-----						Total (Over 50) Weighted*	
	50 - 500 #	%	500 - 1,000 #	%	Over 1,000 #	%	#	%
Less Than Primary	19	1.5	0	0	0	0	19	0.9
Primary	23	1.8	0	0	0	0	23	1.1
Less Than High School Graduation	76	6.1	3	2.6	4	1.2	83	4.2
High School Graduation	485	38.6	36	31.6	45	14.0	566	31.2
Less Than Bachelor	179	14.3	16	14.0	55	17.1	250	14.9
Bachelor	404	32.2	50	43.9	140	43.5	594	36.9
Post Bachelor	70	5.6	9	7.9	78	24.2	157	10.8
(Total University)	(653)	(52.0)	(75)	(65.8)	(273)	(84.8)	(1,001)	(62.6)
Total All Levels	1,256	100.0	114	100.0	322	100.0	1,692	100.0

* Weighted according to the total number of employees employed in manufacturing in different sizes of establishments, grouped according to number of employees.

executives in the big companies.

The very apparent and very close relationship between executive achievement and education will obviously influence the ethnic origin of the management group unless all ethnic groups have the same quantity, quality and mix of education.

What one would like to be able to do at this point, therefore, is to describe completely the education of the management class, not only by years of education but also by the kind and quality of the training received. One would then like to have the same educational breakdown of the population by ethnicity. With this information one could apply the percentage distribution of the existing management to the actual educational distribution (again by quality, quantity and mix) of the various ethnic groups to get a "prediction" of the expected representation of each ethnic group in management.

By comparing the actual with the expected representation of each ethnic group in management, we would obtain an estimate of the importance of non-educational factors in the choice of managers. And these non-educational factors would include ethnic prejudice, as well as language skills, culture, and so on.

Unfortunately we are very far from being able to make such calculations. Instead here is what we have done.

First of all we assumed that the distribution of the educational levels of the 1,692 executives in our sample could be applied to all executives. However, because our sample was subdivided by size of establishment, and because the educational characteristics of managers vary with the size of firm, it was

necessary to estimate the relative importance of each of our size categories in the total population. To solve this problem, we assumed that executives were divided among different-sized firms in the same ratio as the total labour force. The Dominion Bureau of Statistics' estimate of the manufacturing labour force in firms employing 50 to 500, 500 to 1,000, and over 1,000, therefore, provided us with the weights which we applied to Table 2.5.4.2.3 to estimate the educational distribution of 100 managers drawn at random from the population.

There are, of course, a number of shortcomings in this approach. For one thing, we suspect there are rather more executives per thousand of the labour force in large than in small firms and since the educational requirement for executives in large firms is considerably higher than for those in small firms, we are probably understating the education of the average executive. However, because of time restraints, this estimate was the best we could make.

Our next step was to apply this distribution of the educational characteristics of managers to the 1961 Census estimate of the labour force broken down by education and ethnicity.

The calculations in the following table give us the expected number of executives from each ethnic group if the executives were chosen from each ethnic and educational category of the Census on a random basis.

We see, for example, that on the basis of the data presented, French-Canadians should make up about 59.8% of the managerial work force of the Province.

This table, then, permits us to compare the expected percentage with the actual percentage that each ethnic group did, in

TABLE 2.5.4.2.4

Expected Distribution of Managers in Quebec by Ethnicity Based on Random Selection Assuming the Same Educational Distribution as Shown for the Executives of Firms Employing more than 50 Employees

Educational Level	Ethnic Group	Number in 45-65 Age Group ('61 Census)	Sub-Weight	Weight of Educational Level	Expected Number of Executives in Ethnic Group per 100 Executives			
					Fr.	Eng.	Other	Total
Primary and less than primary	French	434,638	83.0		1.6			
	English	40,763	7.8			0.2		
	Other	48,086	9.2				0.2	
	Total	523,487	100.0	2.0				2.0
Less than high school	French	155,174	70.4		3.0			
	English	50,400	22.8			1.0		
	Other	14,999	6.8				0.3	
	Total	220,573	100.0	4.2				4.2
Completed high school	French	34,062	69.2		21.6			
	English	11,899	24.2			7.6		
	Other	3,292	6.7				2.1	
	Total	49,253	100.0	31.2				31.2
University: Less than Bachelor's Degree	French	10,733	51.8		7.7			
	English	6,613	31.9			4.7		
	Other	3,412	16.4				2.4	
	Total	20,758	100.0	14.9				14.9
University: Bachelor's Degree or Higher	French	14,587	54.4		25.9			
	English	7,472	27.9			13.3		
	Other	4,741	17.7				8.4	
	Total	26,800	100.0	47.7				47.7
Expected Ethnic Distribution of Managers				100.0	59.8	26.8	13.4	100.0

fact, contribute to the management class. By dividing the actual, by the expected, percentage figure, we are able to determine new and rather more refined achievement ratios. These refined achievement ratios are set out in the following table.

TABLE 2.5.4.2.5

Refined Managerial Achievement Ratios in Quebec
for those earning \$10,000 and over per year

Ethnicity	Expected Contribution of Ethnic Group to Management	Managers (D.B.S. Classification)		Professionals except craftsmen & salesmen	
		Actual %	Achiev. Ratio	Actual %	Achiev. Ratio
French	59.8	44.3	.74	48.7	.81
English	26.8	33.0	1.23	32.1	1.20
Other	13.4	22.7	1.69	19.2	1.43

If we compare the achievement ratios set out in the above table with the cruder achievement ratios given on page 106, we can see how much of the apparent advantage of the Anglo-Canadians and the apparent disadvantage of the French-Canadians disappears when we make allowance for years of formal education. The Anglo-Canadians in management positions of \$10,000 and over, as defined by the Dominion Bureau of Statistics, who seem to have an achievement ratio 158 percent greater than that expected on the basis of a random selection from the total population, have this advantage cut to 23 percent for this particular category. The French-Canadians, instead of a 41% disadvantage, have, on the basis of the above table, a 26 percent disadvantage.

One of the most serious problems in the foregoing analysis, however, is that it ignores the qualitative differences in education

which undoubtedly exist; more important, it ignores the educational mix, which is to say that it assumes that all university graduates have an equal chance of obtaining an executive position.

As far as quality is concerned, it would be useful in this regard to compare the academic qualifications of faculty, the amount of research done, and the size of library in the French and non-French universities. While such a comparison goes beyond the scope of this study, we believe that today the French-speaking universities would compare favourably with their counterparts in North America, but we doubt very much whether the comparison would have been in their favour 20 years ago, and this must have had some impact on the students attending those institutions at that time who, of course, are today's managers.

An important problem arises in estimating the number of college graduates in the different ethnic groups: it is, once again, the problem of translating the B.A. of the collège classique into a North American equivalent. It seems to be generally conceded that in the past the degree offered by the collège classique was not the equivalent of the Bachelor's degree in the North American university. In France, the "bache" or "bachaud" was a college certificate which admitted one to the university for a first university degree. In Quebec the bachaud became translated as a Bachelor of Arts, though it is doubtful that it ever equalled a B.A. in the average North American university.

The main difficulty, however, in accepting the "refined" managerial achievement ratios is that they make no allowance for

the differences in the mix of university education of French and other Canadians.

We know that the proportion of the French-Canadian population with university degrees is below the corresponding proportion for other Canadians, but it is also apparent that this deficiency is not spread evenly over all disciplines.

The professions of law, medicine, architecture, divinity and pedagogy are probably as well, or almost as well, represented per thousand of population for French-Canadians as for any other ethnic group. The same cannot be said for the manager-producing disciplines of engineering, commerce or business.

The neglect of business education was certainly not confined to the French-speaking universities, but because of the relatively easy access of the English-speaking of Quebec to business schools in the United States and other parts of Canada, it seems certain that this deficiency hurt the French-Canadians much more than the English-Canadians. Should anyone think this point unimportant, it should be pointed out that in Canada at the present time schools of Commerce and Business account for no more than 6 percent of the total degrees earned in Canadian universities. The corresponding figure in the United States is close to 15 percent. At the time when today's managers graduated, say, 20 years ago, business education in Canada was really just starting.

If, as some people believe, all university degrees were equally proficient at producing managers, we should expect to find commerce graduates constituting something of the order of 3 percent, and certainly not more than 5 percent, of the total management class. And yet of the 709 managers with bachelor degrees replying to our mailed questionnaire, 234 or 33 percent had training in commerce or

business! This means a relative achievement ratio of the commerce graduate as compared with other university graduates of at least 6.0, which means that the commerce graduate is at least six times as likely to become a top manager as the average university graduate.

Of these 234 commerce graduates, we found that only 26 (11 percent) were French-Canadians. The balance were drawn from English or other ethnic groups. From this example it can be seen that a simple comparison of achievement ratios on the basis of years of education is far from adequate. For this reason it seemed better to make use of the Federal Department of Labour survey again and begin our analysis with reasonably homogeneous professional groups of French and other Canadians and to determine the degree of success these two groups had in entering the management stream.

2.5.4.3 Managerial Achievement of Architects, Scientists and Engineers

The analysis in Section 2.5.4 is based on the same Federal Department of Labour survey which provided the statistical basis for our study of professional achievement.

As before we have assumed that the graduates of the University of Montreal (L'Ecole Polytechnique), Sherbrooke, Laval and L'Ecole des Beaux Arts are so overwhelmingly French-Canadian that we can safely assume graduates of these universities to be good representatives of the French-speaking sector of Quebec. For purposes of this chapter, then, these graduates again comprise our French-Canadian sample. Graduates of all other universities are lumped together to represent the non-French population.

Each respondent was asked among other things to designate

the function he performed, and one of the categories he could check was management. The replies, therefore, enabled us to determine for French-Canadians and others the number and percentage of each discipline and each graduation class (e.g. electrical engineers graduating from 1950 to 1954) who were in management. We were also able to determine the average salary of each management group.

2.5.4.3.1 Architects

Chart 2.5.4.3.1.1 shows the percentage in management and the salaries of French-Canadian and Other Architects.

There are only 29 French-Canadian, and 48 Other, architects in our sample who consider themselves to be performing management functions. The graphs, therefore, show considerable variation which is probably not too meaningful.

Insofar as salaries are concerned, the 15 post-war graduates are at an income advantage, while the 14 war and pre-war graduates are at a disadvantage. As for the percentage in management, the French-Canadians are at a disadvantage, though this may be a function of the average size of the architectural firms owned by French-Canadians and others.

On balance the very considerable income advantage which the professional French-Canadian architect has does not show up among those architects who have called themselves managers.

2.5.4.3.2 Scientists

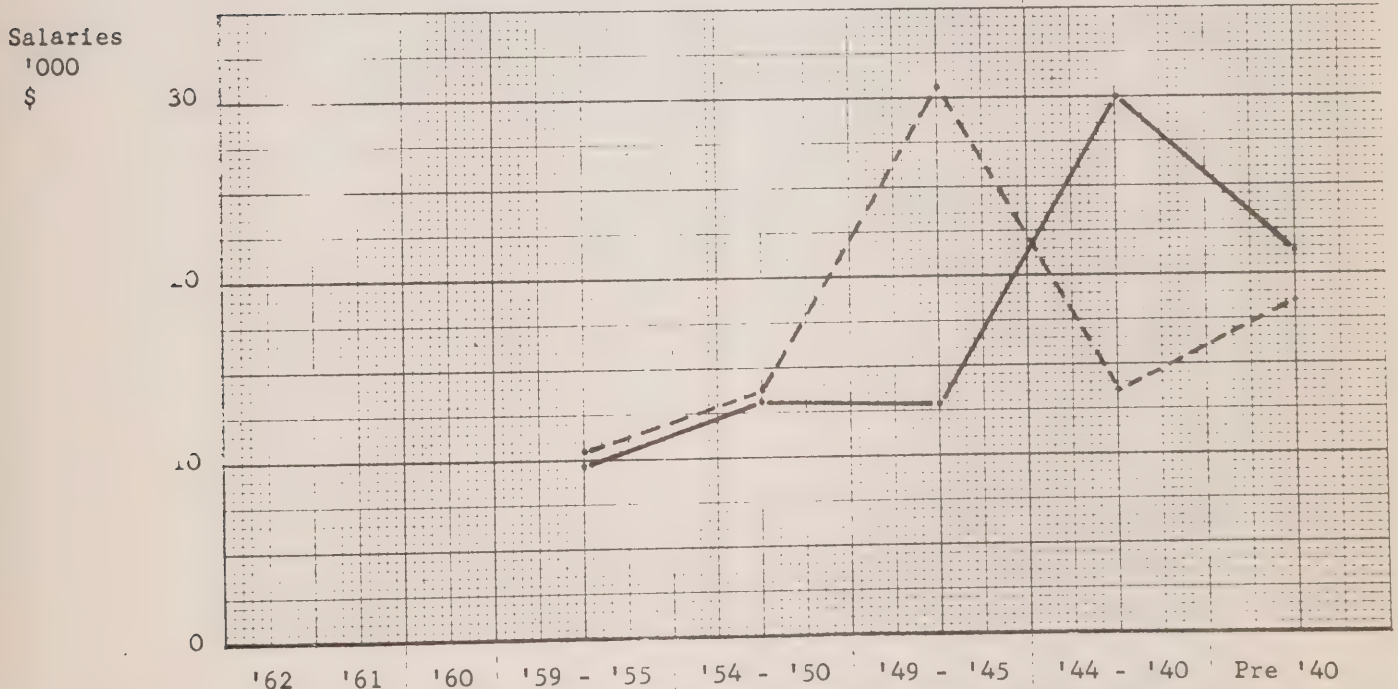
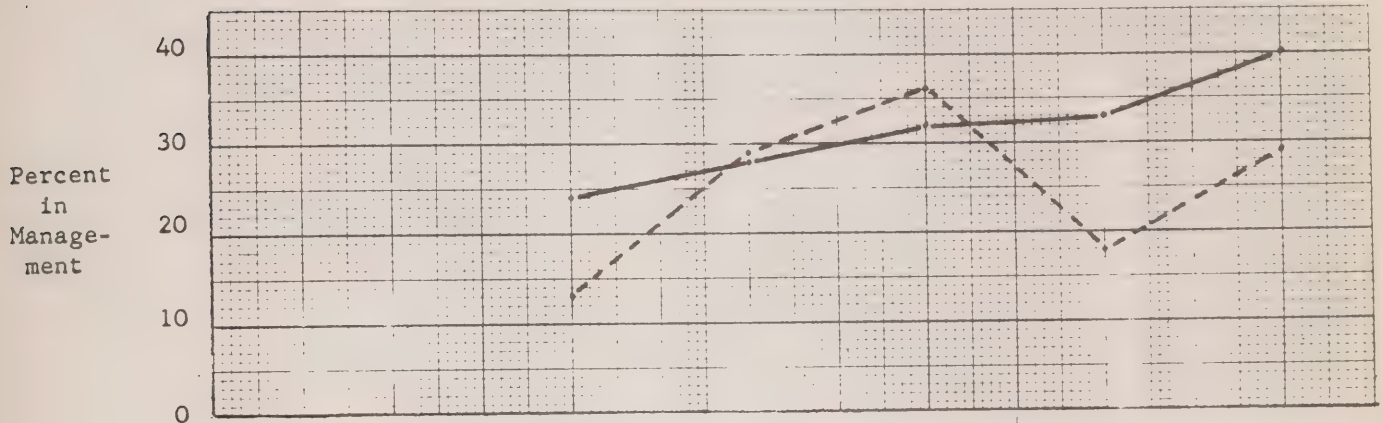
In the analysis of professional achievement we found that the average French-Canadian scientist in Quebec who was in neither management nor education was at a marked disadvantage, though most of the

MANAGEMENT ACHIEVEMENT

DISCIPLINE Architecture LEVEL Bachelor

Upper Graph: Percent of graduates (excluding those in education)
in management from French-language Universities-----
and Other Universities _____

Lower Graph: Average salaries of graduates (excluding those in education)
in management from French-language Universities -----
and Other Universities _____



Number in Fr.	0	0	0	4	7	4	2	12
Management	0	0	1	9	12	6	1	19
Percent - Fr.	0	0	0	13	29	36	18	29
Management	0	0	50	24	28	32	33	40
Salary	0	0	0	10500	13714	30625	13500	18541
	0	0	8500	9611	13208	12833	30000	21263

explanation was apparently to be found in the nature of the "other courses" taken at university. In Charts 2.5.4.3.2.1 and 2.5.4.3.2.2 we can see that the disadvantage also applies to scientists in management. In the first chart we see that when we look at salaries, the French-Canadian in management who graduated before 1950 is about on a par with other scientists. Those who graduated before 1950 have, as before, a considerable income disadvantage.

The graph of managers with an "other science" background shows again that most of the disadvantage is felt by French-Canadians with "other courses".

In our sample there are only 15 French-Canadian scientists with Master's degrees and a like number with Ph.D.'s who are in management. Both of these groups are at an income disadvantage. Here the experience of Master's graduates in management is similar to what we found for those doing professional work and once again the explanation may lie with the level, and perhaps the translation, of the term "Licence".

However, whereas those French-Canadians who went on to a Ph.D. closed, or nearly closed, the income gap between themselves and other Canadians with Ph.D.'s, the same is not true of those who are in management.

2.5.4.3.3 Engineers

The professionals who are of particular interest to us are the engineers since they represent a group much more homogeneous in the kind and quality of education than any other for whom we have information. The several provincial associations or corporations of

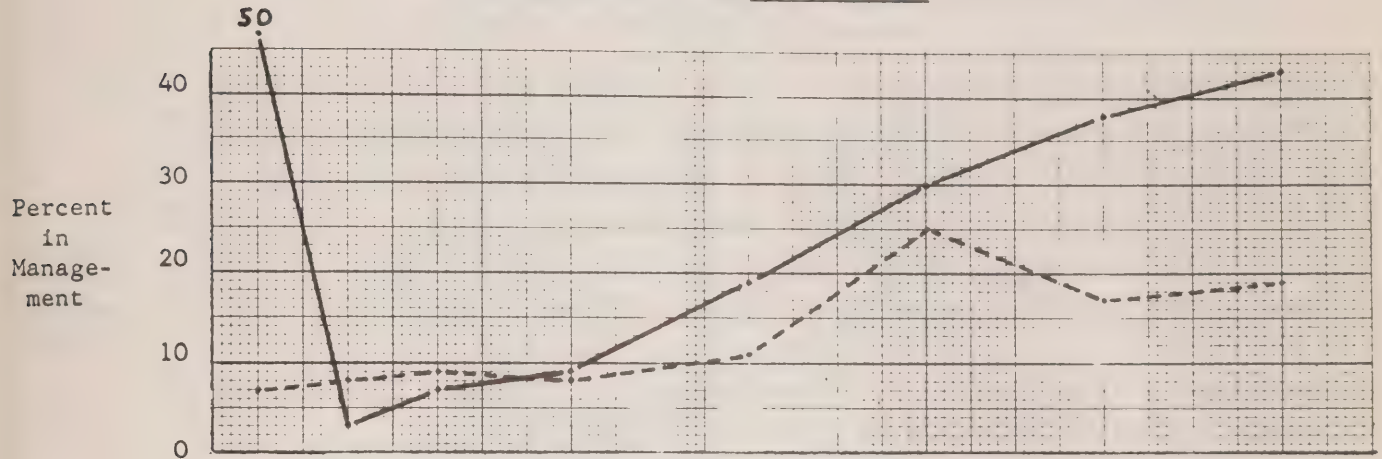
CHART 2.5.4.3.2.1

Survey Quebec Combined

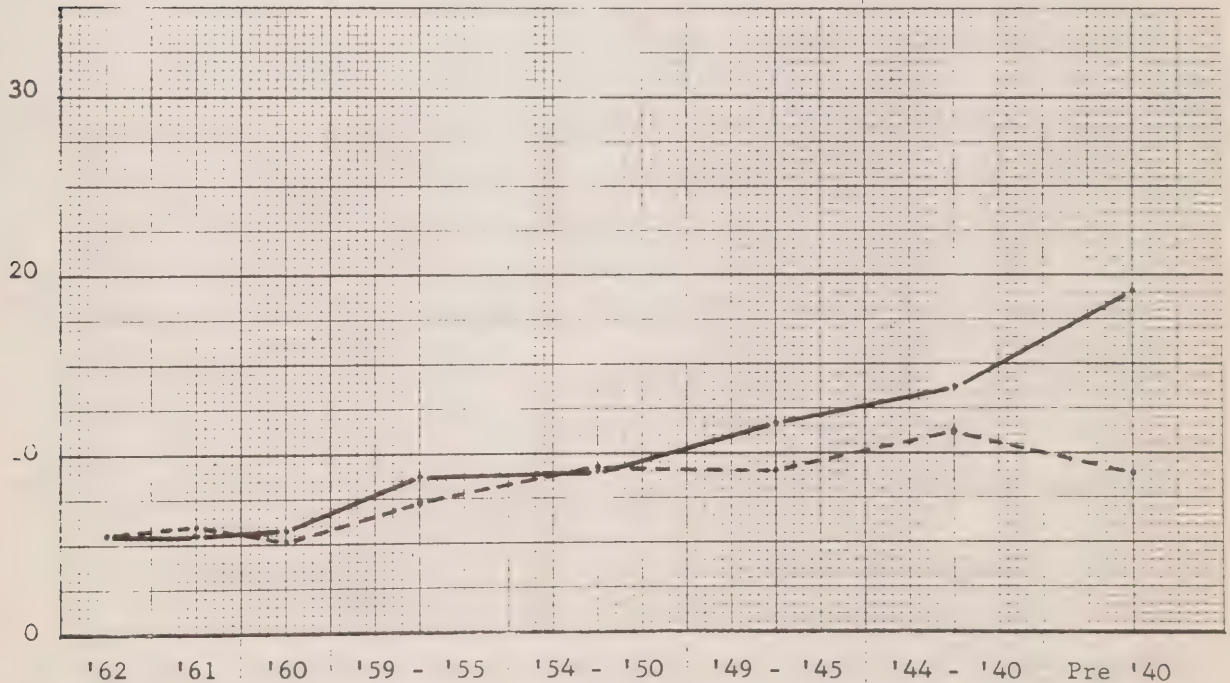
DISCIPLINE All Science Courses MANAGEMENT ACHIEVEMENT LEVEL Bachelor

Upper Graph: Percent of graduates (excluding those in education) in management from French-language Universities----- and Other Universities

Lower Graph: Average salaries of graduates (excluding those in education) in management from French-language Universities ----- and Other Universities



Salaries
'000
\$



Number in Fr.	1	2	3	16	17	33	17	53
Management	1	1	5	24	61	72	45	86
Percent in Fr.	7	8	9	8	11	25	17	19
Management	50	3	7	9	19	30	38	43
Salary Fr.	5500	6000	5166	7250	9235	9045	11205	8867
Other	5500	5500	5700	8750	9040	11701	13844	19058

CHART 2.5.4.3.2.2

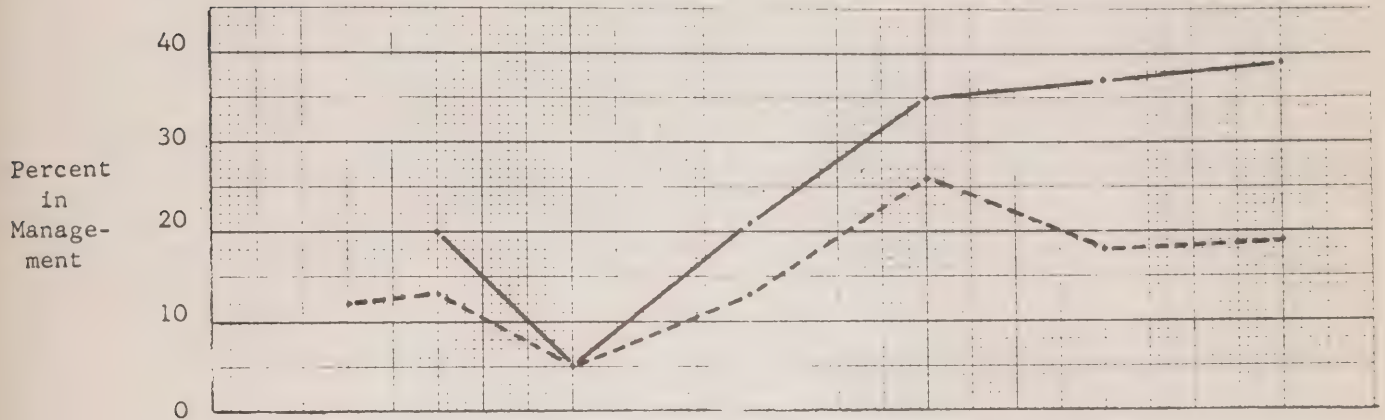
Survey Quebec Combined

MANAGEMENT ACHIEVEMENT

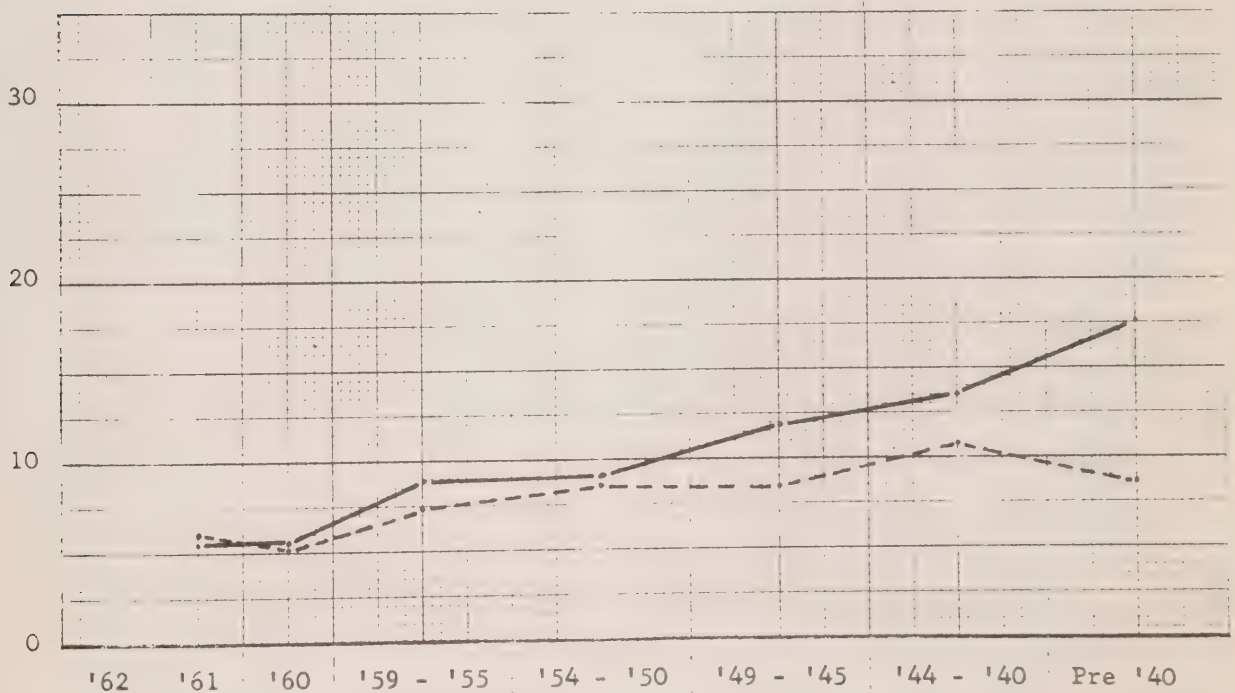
DISCIPLINE Other Courses-Science LEVEL Bachelor

Upper Graph: Percent of graduates (excluding those in education) in management from French-language Universities----- and Other Universities

Lower Graph: Average salaries of graduates (excluding those in education) in management from French-language Universities ----- and Other Universities



Salaries
'000
\$



Number in Fr.	0	2	3	7	14	23	15	47
Management	0	1	2	3	25	34	16	26
Percent in Fr.	0	12	13	5	13	26	18	19
Management	0	100	20	5	21	35	37	39
Salary	0	6000	5166	7357	8571	8456	10766	8553
	0	5500	5500	8833	8960	11852	13531	17673

engineers throughout Canada (and indeed throughout the United States as well) impose roughly the same standards of admission on all applicants, with the result that a comparison of the management achievement of the French and other ethnic groups should be much more meaningful than a comparison of, say, scientists.

The following four charts, 2.5.4.3.3.1 to 2.5.4.3.3.4, give in turn the percent in management and the average salaries of all engineers and of three main categories ("main" at least from the point of view of the number in our sample): civil, chemical, and electrical, engineers.

These charts reveal the striking fact that the French-Canadians are at a significant advantage in obtaining management positions, but those who are in management do not receive as much money as other engineers who reach management positions.

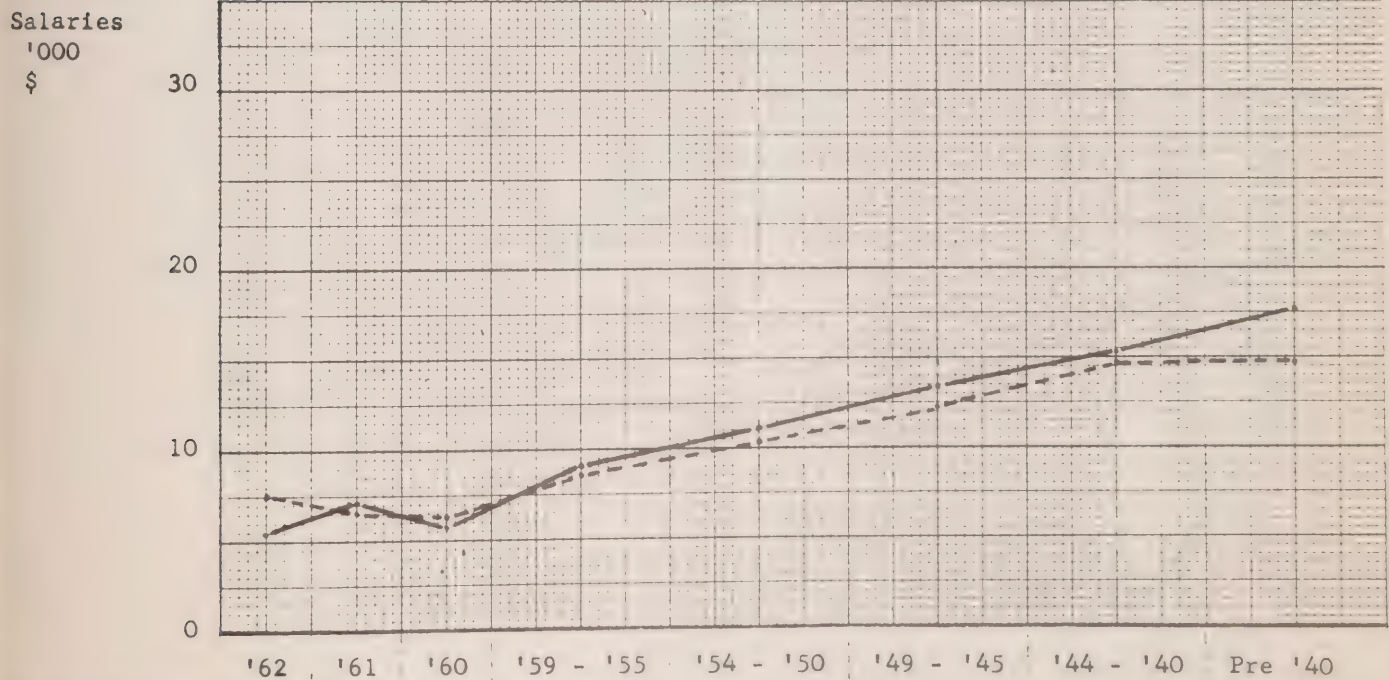
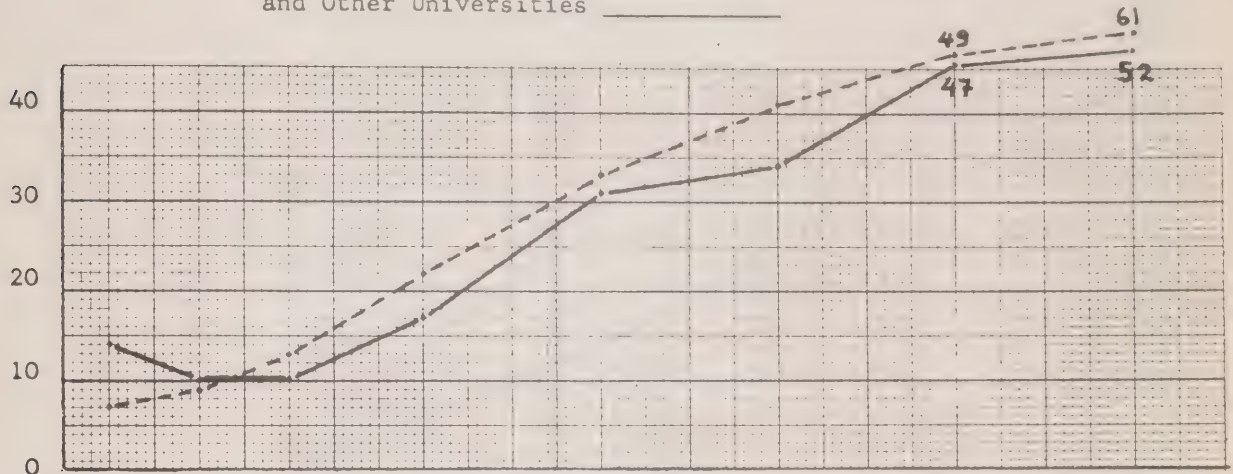
The most important chart from the point of view of educational homogeneity and numbers in our sample is Chart 2.5.4.3.3.2, which shows the managerial achievement of civil engineers. It appears that overall the French-Canadian civil engineer has about 5 more chances per 100 of obtaining a management position than any other Canadian, but that the greater number who "win" managerial jobs receive on average a salary which, on the one hand, is higher than the engineers (French-Canadian or other) who are not promoted into the ranks of management but which, on the other hand, is lower than that received by other engineer managers. The disadvantage of the French-Canadian manager ranges from zero to 10 percent, depending on his age.

As it happens, the total number of management dollars paid to 100 French-Canadian civil engineers chosen at random from all French-

MANAGEMENT ACHIEVEMENT
DISCIPLINE Civil Engineering LEVEL Bachelor

Upper Graph: Percent of graduates (excluding those in education)
in management from French-language Universities-----
and Other Universities

Lower Graph: Average salaries of graduates (excluding those in education)
in management from French-language Universities -----
and Other Universities



Number in Fr. Management	1	5	9	60	53	33	41	110
Other	1	3	4	33	79	57	37	105
Percent in Fr. Management	7	9	13	22	33	41	49	61
Other	14	10	10	17	31	34	47	52
Salary Fr.	7500	6500	6388	8650	10301	12318	14670	14700
Other	5500	7166	5750	8833	11056	13438	15216	17795

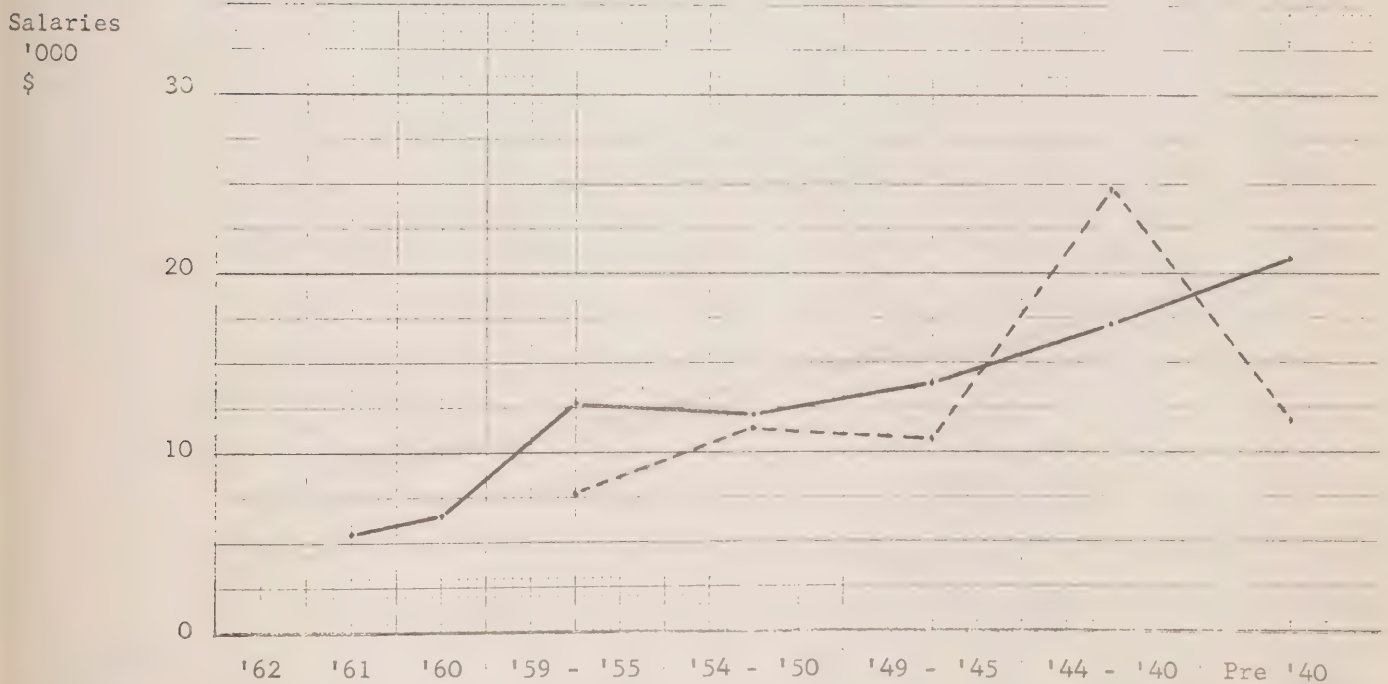
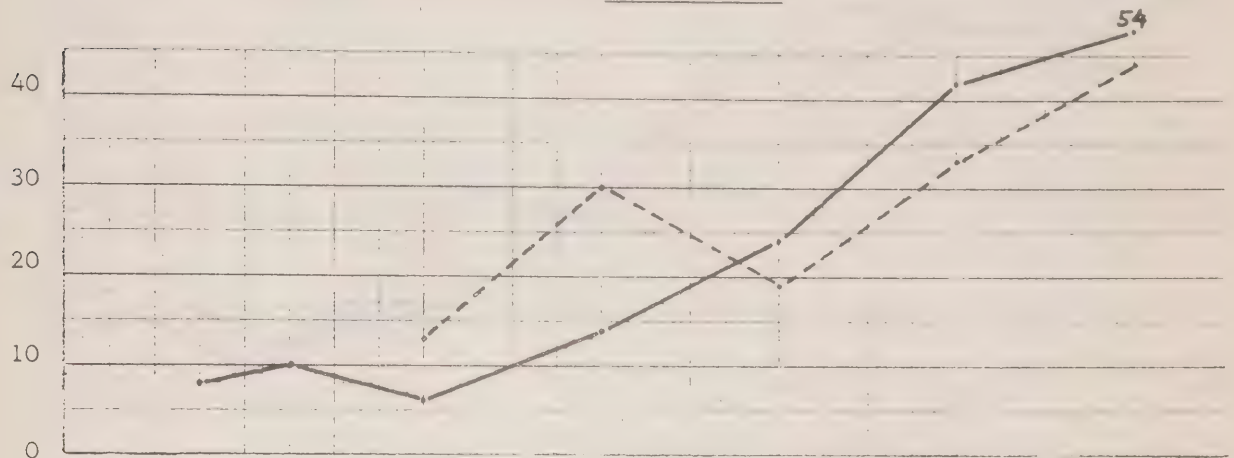
CHART 2.5.4.3.3.3

Survey Quebec Combined

MANAGEMENT ACHIEVEMENT
DISCIPLINE Chemical Engineering LEVEL Bachelor

Upper Graph: Percent of graduates (excluding those in education)
in management from French-language Universities-----
and Other Universities

Lower Graph: Average salaries of graduates (excluding those in education)
in management from French-language Universities -----
and Other Universities

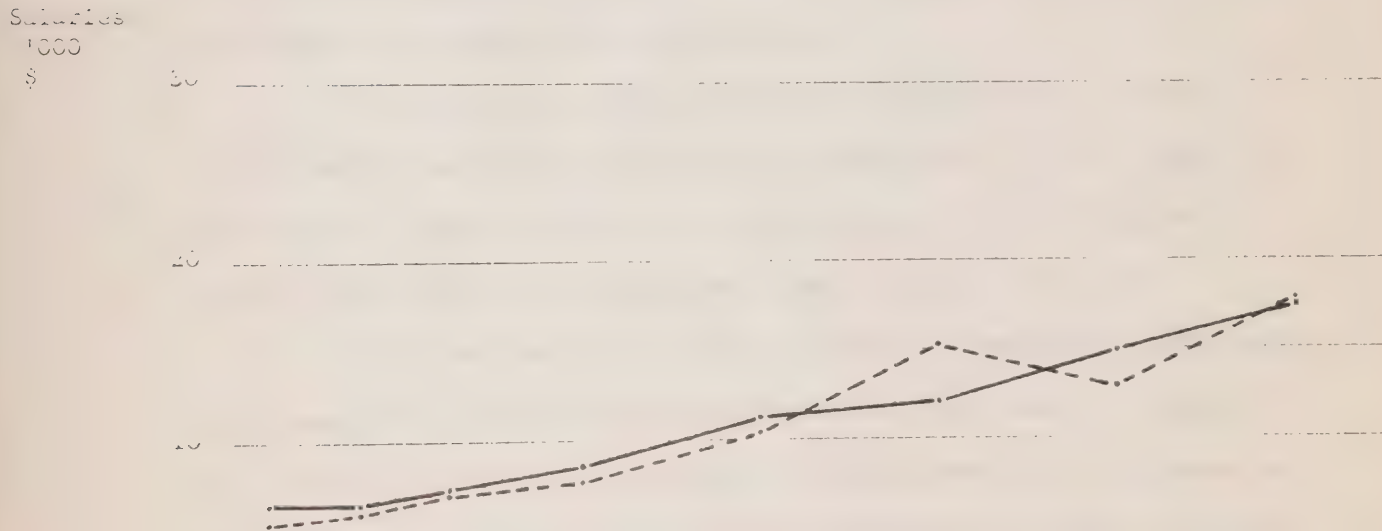
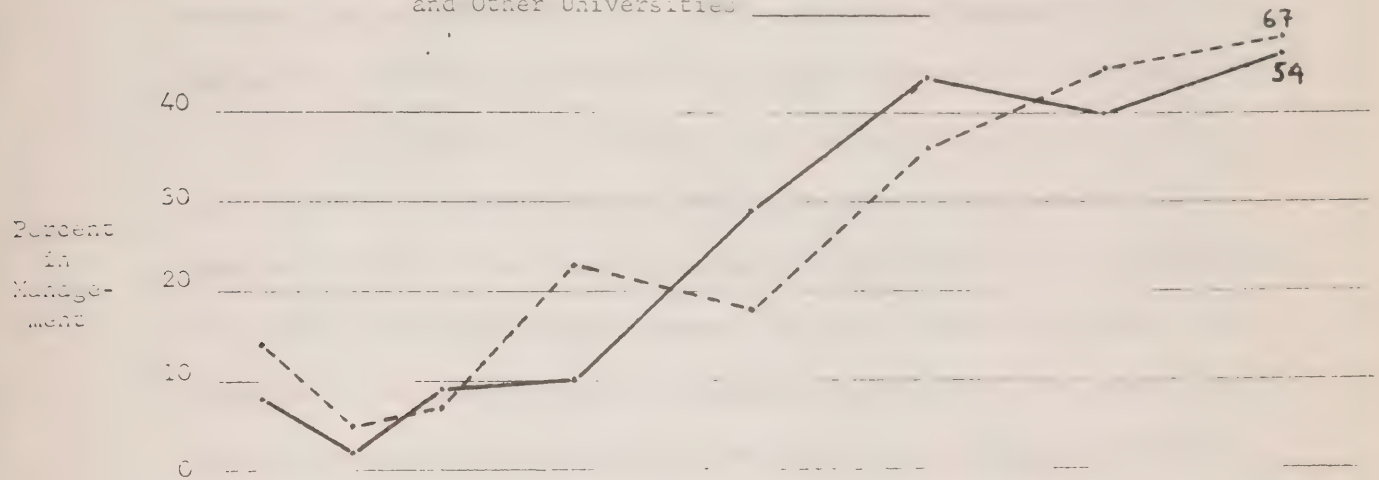


Number in	0	0	0	6	9	4	2	4
Management	0	1	2	7	21	28	43	78
Percent in	0	0	0	13	30	19	33	44
Management	0	8	10	6	14	24	42	54
Salary Fr.	0	0	0	7666	11444	10750	24750	11750
Other	0	5500	6500	12857	12166	13803	17104	20884

MANAGEMENT ACHIEVEMENT
DISCIPLINE Electrical Engineering LEVEL Bachelor

Upper Graph: Percent of graduates (excluding those in education) in management from French-language Universities----- and Other Universities _____

Lower Graph: Average salaries of graduates (excluding those in education) in management from French-language Universities ----- and Other Universities _____



	'62	'61	'60	'59 - '55	'54 - '50	'49 - '45	'44 - '40	Pre '40
Number in Mgmt.	2	2	2	17	10	16	5	4
Number in Mgmt.	1	1	5	24	84	95	36	169
Percent in Mgmt.	14	5	7	23	18	36	45	67
Percent in Mgmt.	8	2	9	10	29	44	40	54
Salary	5500	6000	7000	7676	10400	15343	12900	17875
Salary	6500	6500	7300	8625	11285	12168	14916	17402

Canadian civil engineers in the Province is about the same as the management dollars paid to 100 other civil engineers; the distribution, however, is somewhat different. With the French-Canadian group, the management dollars are spread over a larger number of individuals.

To digress for a moment, it is interesting to relate the data on civil engineers to the managerial achievement ratios of Section 2.5.4.2. The present analysis suggests that if civil engineers are typical and if we could compare like with like in all cases, the number of French-Canadians in management might exceed the number which would be expected on the basis of education. Of course, even if this proposition could be established as a fact, it would not prove that other non-educational factors have no bearing on management selection but only that these non-educational factors cancel out.

Before trying to explain the facts presented in the preceding tables, we should examine three other charts. In all cases the data are too limited to be at all conclusive but they do help us to evaluate the various hypotheses which might explain the facts.

The first chart (2.5.4.3.3.5) shows the managerial achievement of 24 engineers in management who went on to obtain Master's degrees and the next (2.5.4.3.3.6) indicates the experience of 19 engineers at the Bachelor's level who are performing management functions in Ontario. The final chart (2.5.4.3.3.7) adds 7 science graduates to the 19 engineers and shows the combined experience of these two groups in Ontario. Reference will be made to these charts later.

The most obvious explanation of the managerial achievement of engineers is that they are at once beneficiaries and victims of a

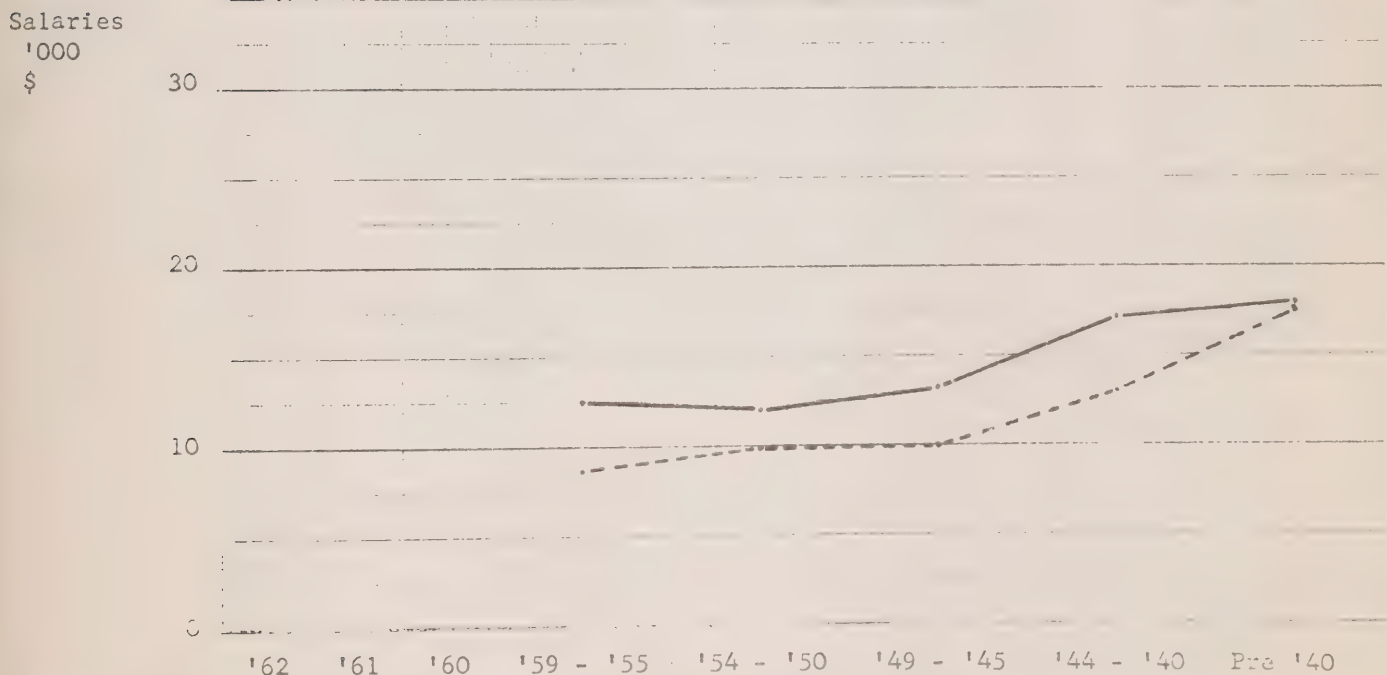
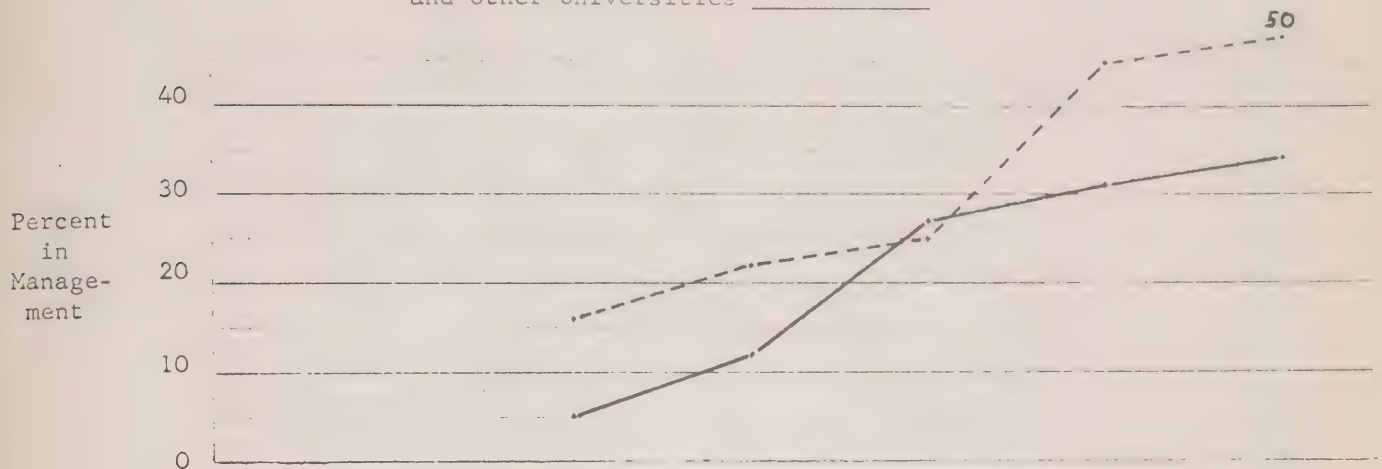
MANAGEMENT ACHIEVEMENT

DISCIPLINE All Engineering

LEVEL Master's

Upper Graph: Percent of graduates (excluding those in education) in management from French-language Universities----- and Other Universities

Lower Graph: Average salaries of graduates (excluding those in education) in management from French-language Universities ----- and Other Universities



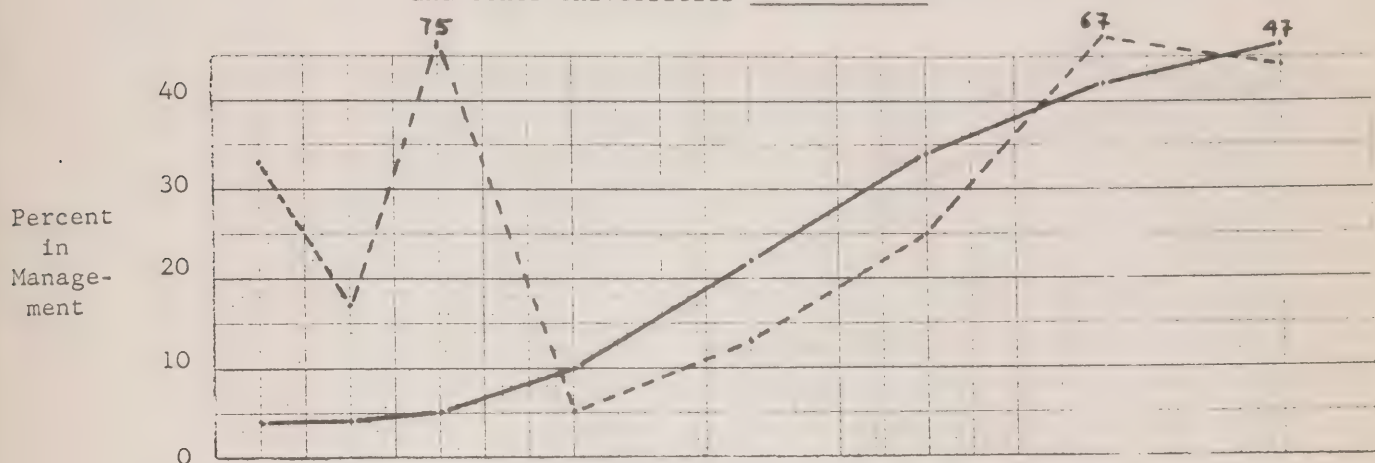
	'62	'61	'60	'59 - '55	'54 - '50	'49 - '45	'44 - '40	Pre '40
Number in Fr. Management	0	0	0	6	5	2	5	8
Number in Other Management	0	0	0	2	7	24	18	63
Percent in Fr. Management	0	0	0	16	22	25	45	50
Percent in Other Management	0	0	0	5	12	27	31	34
Salary Fr.	0	0	0	8666	9900	10000	13000	17562
Salary Other	0	0	0	12500	12071	13312	17250	17793

MANAGEMENT ACHIEVEMENT

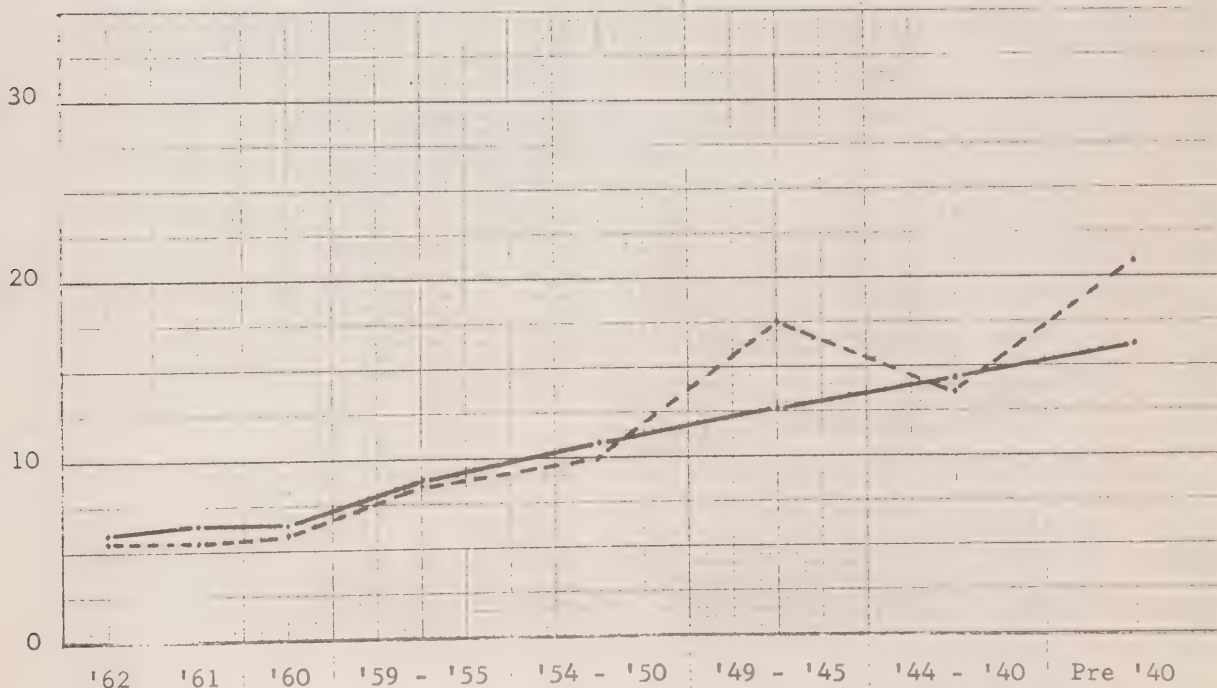
DISCIPLINE All Engineering LEVEL Bachelor

Upper Graph: Percent of graduates (excluding those in education) in management from French-language Universities----- and Other Universities

Lower Graph: Average salaries of graduates (excluding those in education) in management from French-language Universities ----- and Other Universities



Salaries
'000
\$



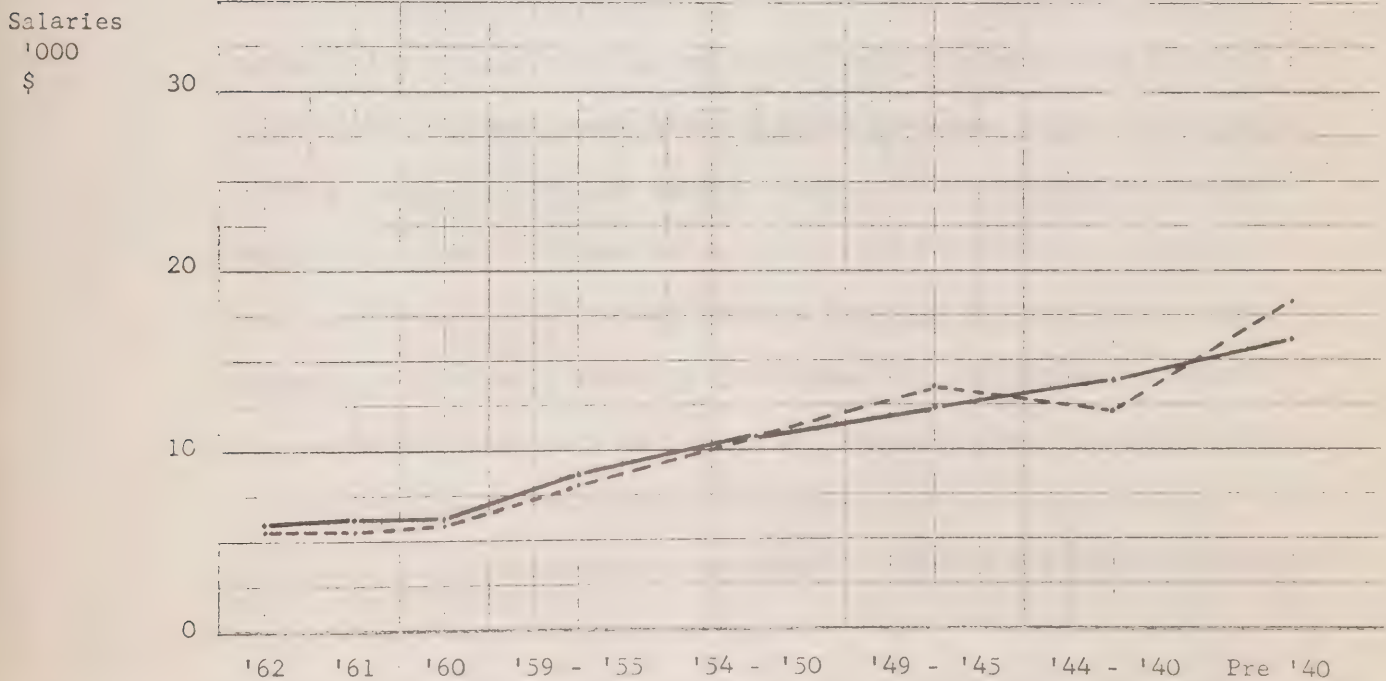
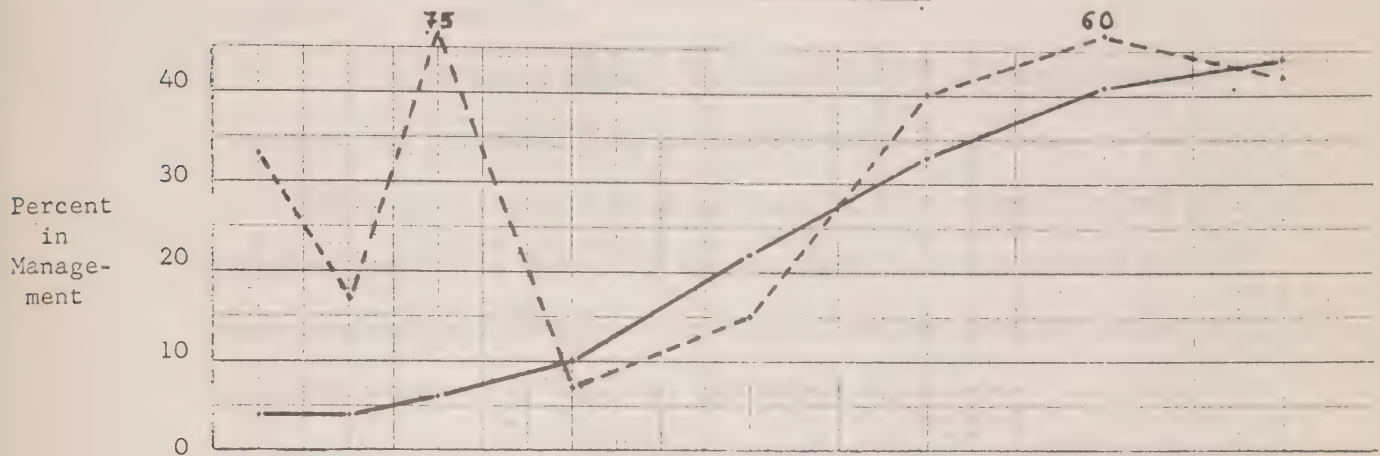
Number in Fr. Manage- ment	4	1	3	1	2	2	2	4
Other	7	13	22	215	668	807	283	1074
Percent in Fr. Manage- ment	33	17	75	5	13	25	67	44
Other	4	4	5	10	22	34	42	47
Salary Fr.	5500	5500	5833	8500	10000	17500	13500	20875
Other	5928	6423	6409	8702	10889	12501	14295	16288

MANAGEMENT ACHIEVEMENT

DISCIPLINE All Engineering & Science LEVEL Bachelor

Upper Graph: Percent of graduates (excluding those in education) in management from French-language Universities----- and Other Universities

Lower Graph: Average salaries of graduates (excluding those in education) in management from French-language Universities ----- and Other Universities



Number in Fr. Management	4	1	3	2	4	4	3	5
Other	7	16	30	238	732	890	342	1212
Percent in Fr. Management	33	17	75	7	15	40	60	42
Other	4	4	6	10	22	33	41	44
Salary Fr.	5500	5500	5833	8000	10750	13500	12166	18200
Other	5928	6250	6233	8636	10779	12406	13808	16126

"bilingual belt" - the zone in the hierarchy of a company which unites unilingual French and unilingual English workers, managers, customers, suppliers and the like.

It is quite logical to assume that the average French-Canadian who graduates from university is able at least to get along in English. Moreover, such a graduate is particularly valuable to an English company in Quebec in the bilingual belt where work may be performed and commands given in French, but information passed up and commands received in English. In such a situation it is likely that a command of French is much more important than a command of English.

On a priori grounds it would seem surprising if the relative command of French and English did not become an important factor in deciding who should be promoted out of this bilingual belt into a higher level of management where English is almost exclusively the working language. One can easily imagine a French-Canadian and an English-Canadian candidate being considered for promotion, each of whom could "get along" in the other's language and who in all other respects were equal. The only difference we have assumed is that one can work effectively in French and can get along in English while the other can work efficiently in English and less so in French. If French is the most important language for working and explaining in the bilingual belt, the French-Canadian would, we assume, enjoy a special advantage at that particular level and the English-Canadian, a disadvantage; but at the next level of management in the company, these advantages could easily be reversed. In such a situation the senior executive who must decide on the promotion might very well

feel that the French-Canadian is making his greatest contribution to the company where he is, and that the English-Canadian would be more efficient at the higher level.

Our data seems to support, though not prove, the hypothesis that something like this does tend to happen. But compared with the overall importance of education, the effect of the bilingual belt is slight. In a professional area the French-Canadian under 50 does not seem to be at a net disadvantage, and in the management area, comparing like with like, the disadvantage, if all the income differences could be attributed to this one factor, appears to be zero to the age of about 35 and perhaps 3 to 4 percent from 35 to 50; and even this is in part offset by the greater number of French-Canadians who are able to obtain management jobs.

Above the age of 50 (or for graduates before 1940) the bilingual belt problem - plus all the other factors like quality of education, etc., which work to the disadvantage of the French-Canadian - seems to put the French-Canadian at an income disadvantage of about 10 percent.

The second hypothesis that might explain both the slightly higher proportion of French-Canadians in management and their somewhat lower salaries relates to the fact that the average French-Canadian works in a somewhat smaller firm. We know that the French-Canadian firms in Quebec are smaller than firms owned by non-French-Canadians.¹ Since they employ French-Canadians almost exclusively, it follows, therefore, that the average French-Canadian engineer works in a

¹ In exactly the same way, incidentally, that Alberta firms owned by Albertans are smaller than the firms owned nationally or internationally.

smaller firm than does the engineer from other ethnic groups. Because the small firm tends to be less highly specialized than its larger competitor, there is greater scope for any one member of the firm to participate in at least some management functions. This is simply to say that in a two-man drafting section, one man is likely to be the chief draftsman and the other the assistant chief draftsman. Larger drafting departments are likely to have more Indians but not many more chiefs, with the result that the smaller the department, the higher the proportion of chiefs.

If a premium is placed on being a chief, or being in a particular environment (for example, one in which French is the working language), it is possible that French-Canadians gravitate to positions in small firms where the pay is received in part in enjoying some management prerogatives and in part from not having to adjust to what might be considered to be a "foreign" environment or a difficult language.

Another interesting hypothesis that is consistent with the observed facts is that in almost all jobs performed by professionals there are elements of managerial functions. Indeed it is now a well-accepted proposition based on sound empirical research that the difference between a line and a staff job is at best a matter of degree. So-called staff people do make operating decisions and direct and coordinate the work of others, and line people often find themselves doing little more than tendering advice.

What this means, of course, is that it will not always be clear, even to oneself, whether one is in fact performing a management

or a professional function. If one ethnic cultural group attaches somewhat greater value to being a manager, it would not be surprising if respondents of that ethnic group decided marginal cases in favour of the managerial, rather than the professional, label. Since managers are paid considerably more than professionals, all that would be necessary is to redefine some of the doubtful cases from managerial to professional in order to produce a lower percentage of French-Canadians in management, and a higher average income of those remaining in the management category.

We must add, however, that we have no evidence ourselves on the importance which different ethnic groups attach to being managers, and so we can do no more than observe that some part at least of the higher percentage in management and the lower average salary of French-Canadian managers could be explained by some French-Canadian professionals - with professional salaries - reporting their function as being managerial.

The final hypothesis which might explain the lower managerial incomes of French-Canadians, especially in the older age groups, is simply that English becomes more important in both English- and French-owned firms as one mounts the managerial ladder. This point was discussed at some length in the previous section, and we shall simply add that there is some evidence that the relative position of the French-Canadian improves wherever we can identify or single out a group which is likely to be bilingual. Charts 2.5.4.3.3.6 and 2.5.4.3.3.7, which show French-Canadian engineers and French-Canadian engineers plus scientists in Ontario, indicate that French-Canadian managers are on a par with other managers in that Province.

Chart 2.5.4.3.3.5, which gives information about French-Canadian engineers who have received Master's degrees (who, we argued, in the analysis of professional engineers, would likely be more bilingual than those with Bachelor's degrees) shows that they have done very well in obtaining management positions though their relative salary position is not so favourable as the French-Canadian engineer at the Bachelor's level. The interesting exception is that the pre-1940 Master's graduate earns virtually the same managerial salary as all others and has had better luck in obtaining management jobs.

In considering the position of the French-Canadian engineer in management, we have not so far considered the role of ethnic prejudice in corporate practices and policies.

Undoubtedly such prejudice exists and undoubtedly it does influence individual decisions. Our analysis suggests, however, that it cannot be a very important problem in the aggregate. From the point of view of the percentage in management, the French-Canadian engineer is not at a disadvantage at all. From the point of view of salary, the disadvantage is not great, and some part of this disadvantage must certainly be attributed to the size of the firm, the bilingual belt problem, possible reporting differences, and to genuine language handicaps. Certainly the net effect of ethnic prejudice cannot be great.

2.5.5 Conclusion

It is very easy to understand the origin of the popular view that French-Canadians are not maîtres chez eux - that they do not have a fair share of the management jobs and are in some sense being discriminated against. If one compares the proportion of French-Canadians in the Quebec population with French-Canadians in management, this view seems to be confirmed. Our analysis has shown us, however, that the more carefully one refines the comparison and the closer one comes to comparing like with like, the better the French-Canadian does vis-à-vis other ethnic groups.

The most homogeneous group of French- and other-Canadians which we could find was the engineers. Based primarily on the experience of this particular group, we may draw the following conclusions.

1. Taken together the French-Canadian manager and professional engineer under the age of 50 has an income advantage vis-à-vis all other groups.
2. When the managers in this group are considered separately, the French-Canadians are at an advantage when it comes to obtaining management positions, but are at a disadvantage with regard to income ranging from 0 for people who graduated in the last 10 years to 3-1/2 percent for people who graduated from 10 to 25 years ago.
3. Civil engineers over the age of 50, i.e. those graduating before 1940, are at a 6 percent income disadvantage taking

managers and professional people together, whereas the managers in this group are at an income disadvantage of about 10 percent. However, if we look at those who have gone on to do graduate work (most of which would be done in English), the income disadvantage of this older group disappears both in the management and in the management plus professional group taken together.

5. In confining our analysis to homogeneous or nearly homogeneous groups, we must not lose sight of the fact that education and not ethnicity is by far the most important explanation of professional, managerial or income achievement. The average university graduate of any ethnic group does very much better than the average high school dropout of any other ethnic group.

6. Where income differences have been found in making comparisons which are not exactly like with like, the difference must be split up among the following factors: (a) language disability including the problem of the bilingual belt; (b) ethnic prejudice; (c) quality of education; (d) lack of mobility; (e) the higher concentration of some ethnic groups in smaller firms.

While we could not positively assign the proportion of the income difference to these particular factors, the internal evidence of this study strongly suggests the importance of a knowledge of English, especially to people in the upper levels of management. In any event it is difficult to see that ethnic prejudice can be an important factor in corporate practices and policies or if it is, it must be compensated for or offset by countervailing forces.

It is evident that there has been at least some slight improvement in the relative position of the French-Canadian in recent years and that on balance this has provided him with a premium for the younger engineer and for the older engineer who is bilingual. So far as our data permit us to speculate, the greater awareness of the position of French-Canadians in industry does not seem to have helped that group which we imagine to have the largest percentage of unilingual French-speaking persons.

THE
HISTORY
OF
THE
CITY
OF
NEW-YORK
FROM
THE
FIRST
SETTLEMENT
TO
THE
PRESENT
TIME
BY
J. C. HEATON
OF
THE
CITY
OF
NEW-YORK
IN
1806
THE
SECOND
EDITION
REVISED
AND
CORRECTED
BY
J. C. HEATON
OF
THE
CITY
OF
NEW-YORK
IN
1811
THE
THIRD
EDITION
REVISED
AND
CORRECTED
BY
J. C. HEATON
OF
THE
CITY
OF
NEW-YORK
IN
1814

